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ARTICLE I.

THE YELLOW OXIDE OF MERCURY IN OPHTHALMIC PRACTICE.

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The yellow oxide of mercury (hydrargyrum oxyd. flavum) is an impalpable powder, which, when properly mixed with vaseline, makes an ointment of the greatest uniformity, and on this account is preferred by oculists to the red oxide. It is a powerful local stimulant and alterative, promoting the absorption of the products of inflammation, and encouraging the process of repair; but we know little about the exact way in which it accomplishes this effect, although it has been in use these twenty years.

It owes its introduction into ophthalmic therapy principally to the late Dr. H. Pagenstecher, of Germany, upon whose recommendation, in 1861, it was methodically employed in many eye-clinics.

But though it showed itself worthy of the high praise bestowed upon it by Pagenstecher, whenever it was tried, it seems to me it

has not gained yet that wide and general recognition it merits. At home and abroad I have even quite recently met with cases which had been treated by various remedies unsuccessfully, where a few applications of "Pagenstecher's yellow salve" would achieve a speedy cure. One of the best instances of this kind I saw in an eye infirmary two years ago. A case of fascicular keratitis (for which I regard the yellow salve almost in the light of a specific) had been treated with eserine for three weeks without showing the slightest improvement; still eserine was continued, though the yellow salve usually subdues an inflammation in three or four days.

It probably appears as if I have a biased opinion of the remedy; but I hope I shall prove that my partiality, as far as it goes, is well grounded. But while I value the remedy very highly, I am far from following the example of a recent writer, who seems to regard the yellow oxide as a cure-all for almost every inflammation of the conjunctiva and cornea. In his publications he denounced the use of astringents for catarrhal conjunctivitis in terms which leave no doubt about the sincerity of his opinion; they should be abandoned, and yellow oxide be used in their stead. Without questioning the truth of his statement in regard to the happy results he obtained by his plan of treatment, I, for my part, have been so well satisfied with the good effect of mild astringents in the treatment of the simple forms of conjunctivitis, that I feel not disposed to abandon their use.

But there are three diseases of the eye for which I consider the yellow oxide preëminently superior to any other local remedy. These are: 1. One form of blepharitis ciliaris; 2. Phlyctenular conjunctivitis; 3. One form of phlyctenular keratitis.

1. Under the name, "blepharitis ciliaris" (or ophthalmia tarsi), the text-books describe two distinct affections which ought to be distinguished from each other by different names. Both affections have their seat in the sebaceous glands of the lid border, the one being due to inflammation, the other to hypersecretion of these follicles. The inflammation produces pustules and follicular ulcers around the eyelashes; the hypersecretion causes the production of epidermis-like scales. I have, therefore, distinguished the two affections in my records as blepharitis *ulcerativa* and *desquam-*

ativa. But we might as well adopt the nomenclature of the dermatologists, who distinguish the similar diseases of the skin as *acne* and *seborrhœa*.

Now, the form of blepharitis to which I wish to invite the attention of the reader for a few moments, is the seborrhœa or blepharitis desquamativa. Where the disease is well marked, you find along the rows of eyelashes epidermis-like scales of various size and thickness; sometimes they accumulate layer upon layer to form small heaps around one or more eyelashes. These scales can be wiped off by the finger or a soft cloth, or scraped off by the finger-nail. The skin underneath may be reddened, but otherwise it is unchanged, showing neither pus spots nor ulceration. In the milder forms, however, the scales are not so conspicuous; they are very fine and thin, and on this account, often escape the attention of the surgeon. And in some cases, where I suspected the lid border being the source of the patient's complaints, it appeared at first quite normal, but when a little yellow ointment was applied, numerous minute scales could be rubbed off, which before were invisible. In doubtful cases, therefore, I can recommend the use of the yellow ointment as a very good means of deciding the diagnosis.

Such eyelids are exceedingly sensitive to external influences; exposure to impure or cold air, winds, heat, gaslight, make them red, and the patient is annoyed by an unpleasant burning and itching sensation in his eyelids. But the principal complaint is a sort of asthenopia; the patient comes to you saying he has got "weak eyes;" he cannot enjoy the free use of his eyes for reading, writing, or any other close application; sooner or later he is obliged to abandon work because his eyes ache, and burn, aad weep, and feel as if they were full of smoke or dust; sometimes ordinary daylight even is unbearable to such eyes.

The source of these subjective symptoms is not the seborrhœa itself as much as the hyperæmia of the tarsal conjunctiva, which is always associated with it. And since the conjunctival hyperæmia sufficiently accounts for all the subjective complaints, many physicians and oculists overlook the seborrhœa, or, if they notice it, regard it as secondary in nature and importance, and concentrate their whole therapeutic effort upon the conjunctival hyper-

æmia. The whole list of astringent eye-waters is tried successively; or the conjunctiva is touched occasionally with a crystal of alum or copper. Month after month such patients have been treated for "granular lids," when the most thorough examination failed to discover even a microscopic evidence of past or present granulations, but simply found hyperæmia of the conjunctiva dependent on blephar. cil. desquamativa. The result of this wrong treatment can easily be imagined. It hurts both the patient and the physician. It hurts the patient physically, because it aggravates his complaint; and it hurts the physician morally, when by another physician his patient is quickly relieved of a complaint which he had been fighting unsuccessfully for so many months.

Ignore the secondary conjunctival hyperæmia; direct your whole attention to the primary trouble; regulate the action of the tarsal glands, and you will speedily relieve your patient of all his complaints, because the conjunctival congestion will subside *pari passu* with the seborrhœa. Two instances may be related for the sake of illustration. A young lady, while attending a boarding-school abroad, last summer, experienced some asthenopic trouble; she could not read more than twenty minutes, when she was obliged to quit on account of severe burning and aching; her eyes became red and felt very uncomfortable during the rest of the day. A very competent oculist whom she consulted diagnosticated "granular eyelids," and treated the case accordingly. The treatment was very painful, and unsuccessful. Under these circumstances the lady decided to quit school and return home. When she consulted me, I found a slight bleph. cil. desquam., $V=\frac{20}{20}$; under homatropine H 1-50; simple hyperæmia of the conjunctiva of the upper lids, and the conjunctiva of the lower lids very red and swollen. This swollen condition I attributed to the effect of the previous treatment, and took no further notice of it. Four applications of the yellow salve relieved the young lady of all her eye trouble, and she could read again all day without the least discomfort.

Another instance is the case of a lady, aged twenty-two years. Her eyes had been "weak" the past three years. Last year they had been treated with the alum crystal for six months

without any benefit. At her first visit her eyes were very red, as if she had just been crying; the borders of the eyelids were thickly covered with sebaceous dandruff-like scales; the conjunctiva was intensely bright red, but thin and smooth, and there was no secretion of mucus. R. E. V=$\frac{20}{200}$ only; L. E. V=$\frac{20}{20}$, and Em. also under homatropine. The cleaning of the lids and the application of the yellow salve made them very red; but on the next day they appeared much better, and within four weeks they were cured.

But in order to secure these good results, I deem it necessary to give the case my personal attention, or to instruct some attendant or friend of the patient in all the minutest details of the treatment. If the patient is simply told to rub the ointment in his eyelids, he will probably spread it indiscriminately on any other part of the lid but the border which should be anointed. You must show him how and where to apply the ointment, and in the first place, you must impress on his mind the absolute neces sity of cleaning the lid borders of all scaly matter prior to the inunction. Show him how easily and harmlessly these scales can be removed with the fingers or a soft cloth. When the eyelids are scrupulously clean, take with the end of a probe a small amount of the ointment (as much as the size of a pin's head is sufficient for one eyelid), and spread on the skin along the row of eyelashes. If the lower eyelid is to be treated, it is drawn down with the fingers of one hand, and the ointment spread below the eyelashes is thoroughly rubbed upward into the ciliary border with the finger of the disengaged hand. To treat the upper lid, it is best to close the eye, and by a slight traction upon the skin of the upper lid to evert its free border just enough to bring it in view; then the salve, spread out above the eyelashes, is rubbed down into them. When the application is made in this manner, it is not likely that any of the ointment will get beyond the row of eyelashes upon the posterior edge of the free border, whence it would easily find its way upon the conjunctiva, and cause unnecessary irritation and pain; but when any particles of ointment are found there, they should be wiped off with a soft cloth. The salve must be rubbed in so thoroughly that nothing but a faint greasy appearance of the ciliary edge betrays its presence. One such

inunction each morning is usually sufficient to relieve even the worst degrees of bleph. cil. desquamativa.

2. The seat of the *phlyctenular conjunctivitis* is the ocular conjunctiva. Either at the sclero-corneal border or at a short distance from it, we find the epithelium lifted up by small grayish nodules, ranging in size between a millet and hemp seed. The development of these nodules or *phlyctenules* is attended by more or less hyperæmia of the ocular conjunctiva. When there is but one phlyctenule, the hyperæmia is often limited to a triangular section, having its basis in the retro-tarsal portion of the conjunctiva, and its apex at the seat of the efflorescence. When there are two or more phlyctenules, the vascular injection is proportionately more extended, so that in some cases the entire ocular conjunctiva is engorged, as if we had to deal with a very serious inflammation.

In every phase of this disease the yellow ointment is the most useful remedy. The best mode of its application is this: Suppose the left eye is to be treated; we charge the end of a silver probe with a small amount of ointment; sitting in front of the patient, and holding the probe lightly like a writing pen with the finger of our right hand, we rest this hand on the left temple of the patient; with the fingers of the left hand we separate the eyelids sufficiently to evert the lower lid, and introduce the charged end of the probe from the outer canthus until it has reached about the center of the lower cul-de-sac; now removing our left hand from the eyelids to let them be closed, we slowly withdraw the probe through the canthus. By this manœuvre the ointment is taken off from the probe, while it passes out between the eyelids, and remains within the conjunctival sac; and by gently rubbing the eyelids to and fro over the eyeball (massage) it is uniformly distributed over the surfaces of the ocular conjunctiva. A few applications of this kind allay the inflammation and procure a speedy absorption of the phlyctenules.

Some surgeons employ calomel dust in the local treatment of this affection. In the very mild forms it is perhaps as efficient as the yellow otntment, but I know of cases in which calomel has disappointed the surgeon, while the yellow ointment promptly achieved the desired improvement.

Sometimes the case presents a mixed character; that is to say, the development of the phlyctenules is attended by considerable swelling and catarrhal secretions of the conjunctiva of the eyelids. Under these circumstances our local treatment must be governed by the prevailing disease. If the catarrhal symptoms predominate, astringent lotions (zinc sulph. or alum) should be applied first, to be followed by the yellow ointment as soon as the catarrhal symptoms subside. If the phlyctenular manifestations prevail, begin the treatment with the yellow ointment, and conclude it with adstringentia. And sometimes I have found the alternating plan (one day the astringent and the next day the ointment) the best to answer our purpose.

Absolute purity of the drug, and a careful preparation of the ointment are, of course, two essential requirements for success.

3. The *fascicular keratitis* (or circumscribed vascular corneitis) is a sub-species of the phlyctenular keratitis, and can easily be recognized by its peculiar local manifestations. In the transparent cornea, at a variable distance from its margin, we notice a small gray or grayish-yellow phlyctenule, which is connected with the limbus conjunctivæ by a narrow leash of fine and parallel blood-vessels. The vessels of this bundle (*fasciculus;* hence the term "fascicular" keratitis) are subconjunctival arteries and veins extended over the limbus on to the cornea. The width of this vascular band varies from a very fine red streak to a broad triangle; but its vessels are always closely packed together, showing neither ramification nor tortuosity; and they always terminate at the phlyctenule.

At the beginning the phlyctenula, probably, is formed at or near the margin of the cornea, and as the disease progresses, it is gradually pushed further and further on toward the center of the cornea in front of the blood-vessels. For often we can observe the development of a new phlyctenula at one point of the corneal margin, while at another point in the same eye, one is far advanced already toward the center of the cornea. In the further progress of the disease the phlyctenular nodule loses its epithelium, and is transformed into a small superficial ulcer (vascular ulcer). The infiltration or ulcer may travel across the entire cornea, carrying its vascular band across the center, and thus

seriously obscuring the sight. But it may stop at any point in its progress, remain stationary for an indefinite period, and sooner or later gradually fade away. Its vasicular tail then disappears also, leaving a faint gray streak behind, which, in older cases, remains as a permanent blemish of the eye.

During the progressive stage, and also while the disease is stationary, the eye shows all the signs of acute irritation (redness, lachrymation, pain and photophobia). Children afflicted with this eye-trouble shun daylight, and bury their faces in the pillow or crouch in the dark corner of the room. Now, when we consider that this fascicular keratitis is a disease peculiar to children of a poor, delicate constitution, either from strumous diathesis, or from bad food, or from chronic indigestion; when we consider that those children, to whom plenty of fresh air and sunshine are the best and most needed tonics, are deprived of these luxuries for weeks, or even months, by their sore eyes; when we consider the evil effects of prolonged confinement upon their physical and mental development—then we may fully appreciate the high value of a remedy which possesses the power to arrest the progress of the inflammation at any stage, to allay the symptoms of irritation in a few days, and to secure a speedy and complete recovery. So certain is the control of the yellow ointment over the fascic. keratitis, that we may well call it the remedy *par excellence* for this disease. It is far superior to the calomel.

In several text-books it is recommended not to employ the ointment until the signs of irritation have pretty well subsided. I cannot endorse this as good advice, nor can I find any sound reason for it. My experience is that nothing will subdue the irritation quicker than the yellow ointment. I have found its magical influence the more brilliant, the greater the intensity of the inflammation. One application was sometimes sufficient to soothe the most intense pain, to relieve the most violent photophobia, and to enable the poor child to enjoy the fresh air with open eyes which had been spasmodically and hermetically closed many weeks.

Have I pictured the merits of the yellow ointment in too vivid colors? Let the following observations, recorded during the year 1880, give the answer:

1. Geo. S., æt. nine years; vascular phlyctenula in left eye; has been treated with calomel dust the past four months. Begun treatment with yellow ointment May 13, 1880; cured May 31.

2. Anna B., æt four years; left eye, marginal phlyctenules; right eye, vascular phlyctenule reaching to center of cornea; intense photophobia and blepharospasm. Has not opened the right eye for three months. Daily application of yellow ointment from August 4 to 14; occasional treatment till September 10, when eye well.

3. Alice K., æt. one year six months; vascular phlyctenula in right eye, near center of cornea; duration two months. Yellow ointment from April 20 to May 10. Complete recovery.

4. Will. R., æt. thirty-two; May 23, 1880. Since last fall right eye inflamed, and treated with calomel. Vascular triangle occupying lower temporal section of cornea; apex near the cen ter. Yellow ointment. June 12, all traces of it gone.

5. Louis M., æt. eleven; September 5, 1880. Inflamed eyes for two years. Broad vascular band in lower half of cornea of each eye, extending to center, where small ulcer. Photophobia; blepharospasms; much redness of eyeballs. Yellow ointment. September 7, great improvement after two applications; September 20, eyes well.

6. Miss S., æt. fifty-seven; July 12, 1880. Seven years ago violent iritis of both eyes. Right eye hopelessly blind; left eye saved by iridectomy. Repeated attacks of iritis since, which always subsided by the use of atropia. Two weeks ago, left eye became very red and painful, and was not relieved by atropia. Could not bear any light; every movement of eyeball painful; profuse secretion of tears; intense pericorneal injection, especially around lower border of cornea. In lower half of cornea a narrow, semilunar gray ulcer, connected with the corneal margin by a broad vascular band. Yellow ointment, and Dover's powder internally. July 13, no pain; less photophobia; less redness. July 17, no pericorneal redness; ulcer clean and healing. July 29, eye well.

7. Amos R. G., æt. fifty-six; October 7, 1880. Had granular lids twenty years ago. Eyes inflamed three weeks. In upper half of each cornea a semilunar ulcer with sharp, infiltrated bor-

ders; broad vascular band from upper margin to ulcer. Intense pericorneal injection; pain and photophobia. Yellow ointment. Discharged cured October 31.

8. Benjamin G. M., æt. thirty; November 6, 1880. Semilunar ulcer in upper portion of the cornea, with vascular band; great pain and much redness. Yellow ointment. Discharged cured November 20.

9. Eugene Gr., æt. three; right eye, several large phlyctenules in cornea, near lower margin; vascular band to each. Yellow ointment. Under treatment from January 23 to February 14, and cured.

10. February 6; Minnie Z., æt. four; right eye, vascular ulcer in lower nasal section of cornea six weeks; great photophobia. Yellow ointment. February 8, eye open; can bear light quite well.

11 Mary F., æt. eighteen; right eye, vascular ulcer in upper half of cornea; much irritation, four weeks. Yellow ointment. Under treatment from March 5 to April 1. Eye well.

12. Child, eleven months old; right eye inflamed two weeks; swelling of tarsal conjunctiva, and much redness of ocular conjunctiva. In lower half of cornea a yellow infiltration, connected with margin by a vascular band. Treated with yellow ointment from July 3 to 12, and cured.

13. Minna L., æt. two; inflamed eyes since March. Small ulcer in center of each cornea; fine streak of vessels from lower margin to each ulcer. Cured by yellow ointment; under treatment from July 5 to 24.

14. Frank L., æt. four; infiltration in cornea of right eye, with vascular band; much photophobia. Yellow ointment July 10 to 28.

15. Annie Tr., æt. three; phlyctenule with vascular band in lower portion of cornea, right eye. Treated with yellow ointment from October 5 to 20.

16. Clara M., æt. two; right eye inflamed three weeks; phlyctenule with vascular band in temporal portion of cornea. Three treatments with yellow ointment removed inflammation and vascular band.

ARTICLE II.

THE PRESENT STATE OF OPINION ON ANTISEPTIC SURGERY IN THE UNITED STATES. BY Edmund Amdrews, M.D.

The main principles of antiseptic surgery have been approved by the majority of American surgeons. Strict Listerism, however, by which I mean, an adherence to all Lister's peculiar methods, is not generally accepted. I have recently instituted some inquiries on the subject in Chicago, Philadelphia, and New York, with the following results: In Chicago, we generally believe in the principles of antisepticism, but we adopt numerous variations in the methods of application, and do not servilely follow Lister's details.

Drs. Isham, Owens, Gunn, Lee, Fenger and myself are probably of substantially the same opinion in this respect.

Mercy Hospital commenced under my direction to use the antiseptics in modern style some seventeen years ago, simultaneously with Grey's Hospital, London. I at first tried Lister's earlier materials, viz: carbolic putty, carbolic oil and tinfoil, but soon found them inconvenient, and substituted methods of my own, which practically worked better, which in modified form I still use. I only employ the spray when cavities are to be opened, not deeming it any better than a fountain douche in simple external wounds.

The County Hospital, for a good while, only used the varying methods of the different members of the staff, but some three or four years ago, commenced a full Listerian system, performing all operations, and even all ward dressings, under the spray.

More recently this has been abandoned, and at present the methods do not materially differ from other hospitals. St. Luke's and the Michael Reese hospitals follow the modified antiseptic customs of Drs. Owens, Schmidt and Park, who attend them.

In Philadelphia, the canvass of votes is nearly as follows: The elder Dr. Gross ridicules the antiseptic system, or at least did so some time ago. Dr. J. Ashurst, Jr., has no disposition to follow Lister, but occasionally uses a wash of permang. potass.

His usual wash for wounds consists of equal parts of alcohol and water, and his cerates contain oxide of zinc or resin.

Dr. Nuncrede is a strict imitator of Lister, but uses parafine paper instead of Macintosh.

Dr. Hunter discards Listerism and dresses with hot laudanum and simple cerate, with parafine paper outside.

Dr. McLellan has a peculiar sponge dressing.

The hospitals in Philadelphia vary, of course, with the opinions of their surgeons. In a general way, their practice is as follows:

The Philadelphia Hospital gives little attention to Lister, though it uses a carbolated oil on lint, one part to 20 or 40. For a wash to wounds, lead water and laudanum are mixed.

The University Hospital washes with alcohol and water, equal parts, or with lead water and laudanum.

The Presbyterian Hospital also uses alcohol and water, or lead water and laudanum.

The Episcopal Hospital employes, sometimes, strict Listerism, and sometimes nothing antiseptic, except hot laudanum.

The spray is rarely used in Philadelphia, except by Dr. Nuncrede and a few others.

In New York the following items show the drift of opinion:

Dr. Mason, of Bellevue Hospital, uses a modified Listerism, without the spray.

Dr. Little, ditto.

Dr. Markoe, ditto.

Dr. Sands uses chloroform as an antiseptic.

Dr. Weir is an absolutely strict Listerian.

Dr. Willard Parker uses antiseptics only moderately.

In the New York Hospital, only one member of the staff uses full Listerism.

In Bellevue Hospital very little Listerism proper is practiced, though antiseptics are more or less used.

In Roosvelt, St. Vincent's and other hospitals the state of things is about the same; in short, there are very few men in New York who are full Listerians, and on the other hand there are very few who do not make a greater or less use of antiseptic dressings.

Finally, the verdict in the United States is this:

1. Antiseptics are of great practical importance in surgery.

2. It is important to observe the antiseptic general principles, but not desirable to follow all of Lister's complicated methods of application.

3. The spray is not desirable, except in dealing with large joints and serous cavities.

ARTICLE III.

INEFFICIENCY OF THYMOL AS AN ANTISEPTIC. By Edmund Andrews, A.M., M.D., Prof. Clin. Surg. Chi. Med. College.

Thymol has been very falsely lauded as an antiseptic. Scientific men have ascribed efficiency to it in solutions as weak as one part in five thousand, while others, more careful, said one in two thousand. The test of the surgical power of an antiseptic is its capacity to prevent putrefaction in animal substances. I therefore make the following experiment, to determine approximately what strength of the solution of thymol is required for practical work. The result very much lowered my estimate of this over-praised article, whose only advantage seems to be its agreeable odor.

Taking ten vials, I placed in each two grains of beef muscle, with thirty-two cubic centimeters of fluid of the kinds shown in this table. As pure water will not dissolve the quantity of thymol represented in the stronger solutions, a small percentage of glycerine and alcohol were added, to affect the solution, but not enough to materially increase the antiseptic power. The temperature of the room was kept between 60° and 75° Farenheit.

Strength of Thymol Solution....	1/8000	1/7000	1/6000	1/5000	1/4000	1/3000	1/2000	1/1000	1/500	Simple Hydrant Water.
Bacteria present...	2d day	2d day	2d day	2d day	2d day	2d day	2d day	3d day	4th day	1st day.
Putrid odor began.	2d day	2d day	2d day	2d day	2d day	2d day	3d day	4th day	No odor in ten days	2d day.

A glance at the table shows that instead of being efficient in

the strength of $\frac{1}{5000}$, it required $\frac{1}{500}$, or a solution of ten times the former strength, to prevent the development of putrid odor, and even in that solution, living bacteria were found by the microscope. A carbolic acid solution of about the same strength, showed on the tenth day neither bacteria, nor any putrid odor. It is evident from these results that thymol is inferior in power to carbolic acid, instead of being immensely superior.

Inspection of the table shows, however, that an antiseptic may retard putrefaction, and thus be somewhat useful, though not thoroughly efficient. Thus a solution of thymol of the strength of $\frac{1}{2000}$ retarded the development of putrid odor until the third day.

The actual surgical use of an antiseptic requires preparations stronger than the minimum solution found efficient in vial or bottle. A solution of one part of thymol in two thousand for instance, has a slight antiseptic power, but when injected into the complex cavity of a putrescent lumbar abscess, it is further diluted by the secretions within, and such small portions as are at last forced into the deeper recesses, are mingled with so large a quantity of putrid pus as to become wholly inefficient. Clinical experience shows that for the purification of such cavities, carbolic acid is required in the strength of at least one part in forty, and thymol should be still stronger, though the quantity can be diminished after a thorough depuration of the whole sac has once been effected.

These experiments had already been made by me before I learned that the Imperial Board of Health of Germany had recently completed a very exhaustive investigation of all the principal antiseptics. Their report shows that thymol, instead of being a very strong, is actually one of the very weakest of all antiseptics. They grant it, however, to be somewhat effective in the strength of one part in two thousand. As this report will become a standard authority in the world, I wish to caution the profession against trusting in surgical practice in the minimum strength found effective in laboratory experiments. For the reasons given, the complex pockets of a lumbar abscess, or of a suppurating knee joint, will not be disinfected by injecting minimum solutions.

In a recent case which fell under my advice, a lumbar abscess was held in perfect subjection for months, by forced injections of one part of carbolic acid to forty of water. Circumstances having placed the patient temporarily under the care of a practitioner who had faith in weak solutions, septic action was promptly set up, and in two weeks the man was in the full enjoyment of hectic fever, and of a putrid discharge from the abscess. Fortunately he returned in time within my reach, and a few days of forced injection of carbolic acid, at first in the proportion of one part to thirty and afterward of one to forty, arrested the mischief both locally and constitutionally, and restored the patient to comfort and safety.

No. 6 SIXTEENTH ST., CHICAGO.

ARTICLE IV.

THE NATURE AND AFFINITIES OF CERTAIN SUBMERGED FUNGOID GROWTHS.

By E. B. Stuart, Pharmaceutical Chemist and Microscopical Expert, Associate Editor of *The Druggist*.

(Read before the Biological Society, April 5, 1882.)

The natural history of some of the lower fungi is a matter of interest to the physician, both from the relation which these plants bear to certain diseases, and from a purely biological aspect.

The whole order of fungi occupies an intermediate ground between plants and animals, and presents here an affinity to one and there to the other grand division of living forms. Among the more highly organized fungi, as the mushroom tribe, the vegetable element predominates in a marked degree; the puff-ball fungus affords a parallel example, with which every one is familiar. Not so with the myseomycetes, some of which in their mature state, resemble a puff-ball so closely as to require the skill of a specialist to distinguish one from the other.

During the vegetative period, however, these plants have such marked animal characteristics, that one of the most eminent

authorities in this department of study, once proposed separating this order from the fungi, and transferring it to the animal kingdom. As just stated, the myseomycetes, during their entire period of assimilation and growth, exhibit all the characters of animal life. They are simple masses of protoplasm, which remain perfectly free and exhibit amœboid movements, apparently by volition. The organism retreats from strong light, and shuns dry or metallic surfaces; it spreads itself out in a network of living threads, contracts into a ball of tremulous jelly, or retracts its substance into the crevices of the decaying wood on which it lives.

The motile spores of many fungi have, when superficially considered, some characters more animal than plant-like. I refer to their active movements when set free, and the apparent sagacity displayed in seeking their future home. Still this is hardly more wonderful or animal-like than the persistent and systematic manner in which, according to Darwin, the tendrils of climbing plants search for some object to grasp.

The relation of certain fungi to disease is too well-known to the gentlemen of this Society to require mention at my hands.

The immediate subject of this paper, the consideration of submerged fungi, is a minor portion, a fragment, so to speak, of the whole. My attention was attracted to the subject some years ago by the frequent and unwelcome appearance of floculent masses in solutions of the medicinal alkaloids.

Under an inch objective, these masses have the appearance of cottony tufts, made up of white, shining threads of extreme delicacy; more highly magnified, the threads are perceived to be tubular, and, in many cases, partitioned off into long cells, which may contain ordinary granular protoplasm, or in some instances minute spherical bodies, of high refractive power, ranged along like beads, in single file. If these bodies are kept under observation, it will be noticed that the cell which contains them finally disintegrates, and they are set free. After this occurs, provided that the liquid in which they rest is of the proper temperature, and contains a supply of suitable food, the bodies in question begin to bulge a little on one side. This continues until it becomes a prolongation, and the prolongation a thread. The

group of pseudo-spores has now become the nucleus of a new growth, precisely like the first, and like the specimen before you.

(Here the lecturer exhibited various specimens, at different stages of growth, under the microscope.)

If any doubt exists as to the vegetable nature of this growth, suitable tests may be applied. It will be found undoubtedly vegetable in its composition. If, however, an attempt is made to locate the plant botanically, the effort will be fruitless. But one small order of eight or ten species among the fungi is aquatic, and the members of this order are all parasitic upon animal substances, and the method of fructification in that order is altogether different from that just described. The spores in the aquatic fungi are developed in well-marked sacs or asci, while these are formed in any portion of the filament indifferently, or, at least, apparently so, for there are no indications of a sac or difference of structure to suggest a special function for this portion of the filament. Then the spores of the saproligniæ, or aquatic fungi, are motile. As soon as set free, they swim actively about, while these pseudo-spores are as motionless as the seeds of the narcotic poppy. The plant corresponds to none of the described fungi, and it certainly does not belong to the algæ, for it contains no chlorophyll, and grows in the dark as well as in the light. The specimens on the table grew in the box which now contains them, and the box has been kept in a drawer of my desk. No chlorophyll-bearing plant would thrive for any length of time under such conditions. If a specimen is transferred from one of these phials to pure water, growth ceases and it soon disintegrates and disappears. If, on the other hand, it is brought into Pasteur's solution, or Mayer's pepsin solution, it grows rapidly until the liquid is quite filled with the plant, and assumes the appearance of a doughy mass.

Now, the experiment may be varied somewhat, and instead of immersing the plant in Mayer's fluid, it may be supplied with a sufficient quantity of this or that suitable food in an ordinary growing cell, or one of Tyndall's culture boxes.

Under these conditions the mass vegetates luxuriantly for a time, and finally sends up delicate hyptræ, bearing its fruits. This affords the means of identification, and in most cases the

plant will be found to be some one of the five or six most common molds.

If you brush a camel's hair pencil lightly over a mass of common blue mold and then rinse it in a solution of morphia or strychnia, or, in fact, in almost any of the common medicinal alkaloids, and allow the liquid to stand quietly, at the ordinary living temperature of your rooms, for a few days, these fungoid growths will make their appearance, and may be cultivated for years without ever assuming their normal condition or bearing their proper fruit. This mode of vegetation seem quite analagous to the growth of a perennial plant, which, under favorable conditions of soil and climate, will continue to vegetate for many years without bearing fruit. On removing our submerged pericillium from the liquid in which it was growing under abnormal and unfavorable conditions, it soon resumes its normal habit and bears its proper fruit. In the course of my experiments with these fungi I employed the spores of a great variety of species and varied the conditions of growth as widely as my ingenuity suggested methods. In one or two instances I was able to keep the same plant in this submerged condition for more than a year, and finally to secure its normal fruit on restoring it to the air. The experiments were conducted with reasonable care to guard against infection from spores floating in the air, and the results may, I think, be accepted as indicating strongly the true nature of the growth and its relation to other fungi. Two practical questions hinge upon these experiments, namely: The effect of the growth of the plant upon an alkaloidal solution, and the best means of preventing their growth. In regard to the first point, it is quite clear that any increase in the weight of the plant, beyond that of the spores originally added to the solution, must, if the water used was free from organic matter, have been derived from and at the expense of the alkaloid itself.

While a chlorophyll-bearing plant, which feeds mainly from the acriform matter around us, will grow in a pot of earth without taking anything like its own weight of matter from the soil, this is not the case with fungi; they are essentially parasites, and, like animals, derive their carbonaceous food from the mineral kingdom at second hand; they are utterly incapable of re-

ducing carbon dioxide from the air, and under the circumstances before us, must break up and decompose the alkaloid in which they grow and appropriate it to the formation of their own tissues. It is well known that certain fungi are able to decompose comparatively stable and simple compounds, as sugar, urea, etc., etc., to build up from the material so obtained more complex and less stable substances. Some of these reactions are of commercial importance, and have been very carefully and thoroughly studied, and the nature of the decomposition and the composition of the products are well known. In the case of the medicinal alkaloids, however, the nature of the decomposition of the products formed is, I believe, entirely unknown, and while the changes are, in a general way, undoubtedly analagous to the decomposition of sugar by yeast, we know nothing of the physiological effects of these decomposition products upon the animal organism.

The growth of these fungi may, of course, be prevented by any of the ordinary antiseptics. In solutions for hypodermic use, as small a quantity as 5 per cent. of common alcohol will entirely prevent them. They will seldom make their appearance in solution made with the aromatic waters, as peppermint or dill water. If, in addition to this, the solution is warmed to about 150°, when otherwise completed, and reasonable care be exercised in keeping the container closed, no apprehension of their growth need be felt. For the use of pharmacists, who find these solutions convenient for the dispensing counter, this little contrivance (both with cotton filter and small accessory tube through the cork), the idea of which, you will notice, is that of Pasteur's cotton filter, is useful. The solution is filtered into the bottle, the cork carrying the two tubes inserted, and the whole affair placed in the water bath and heated sufficiently to kill any spores that may be present, the exit tube, bent at a right angle, has a sufficient length to intercept all spores on their inward course, and the funnel tube, which supplies air as the liquid flows out, is stuffed with absorbent cotton, which effectually stops the passage of spores through that tube and preserves the liquid from infection. (See discussion of the paper in Society Reports.)

Clinical Reports.

ARTICLE V.

TRAUMATIC LUXATION OF THE FOOT.

N. Wokotawia, æt. fifteen, was admitted on October 15, 1881. He states that while skating, in the winter of 1880, he fell and hurt his right foot. The ankle joint had been much swollen at that time, especially about the external malleolus, and there was a good deal of pain, but no deformity. The doctor called to attend him applied cold water dressing. Three days later, erysipelas having set in, the doctor made some incisions on the outside of the ankle, and thick mattery discharges escaped. About the same time a few abscesses, communicating together, opened spontaneously on the inside of the foot and lower part of the foot and lower part of the gastrocnemius muscle, giving rise to several fistulas. The patient lay sick from four to five months, during which time these fistulas healed, and there had been no caries of the bone. When the patient left his bed, there was no anomaly in the shape of the foot, which was straight, and he was able to walk. The foot became twisted later, however, and subluxation of the knee-joint took place, as subsequent examinations showed.

Actual condition:

Patient well developed for his age. Internal organs normal. Both lower extremities, from the anterior spine of the ilium to the malleoli, were equal in length. The right foot showed a medium degree of plantar flexion, the digital extremity of the right foot being adducted and a little flexed. Active and passive motion were impossible in the ankle joint. The internal malleolus was enlarged, but not protruded. On the inner and on the

outer side of the ankle, a scar was left, which adhered to the bone. There was another scar at the point of attachment of the tendon Achillis, from a bedsore caused by decubitus.

Operation:

October 20, patient was anæsthetized, and trials were made at straightening the foot, but failed. Accordingly, on the 26th, they proceeded to cut. They removed a piece of the malleolus with a chain saw, resecting a picce of the bone, and bringing the remaining pieces together, thus straightening the foot. The wound was dressed with iodoform, and covered with an Argantin bandage.

Course:

October 27, temperature normal; dressings, saturated with blood serum, were not changed. The Argantin bandage was reapplied. On the second day of November, the temperature was normal, the discharge had stopped, and the dressings were dry. November 4, bandage changed. Except a few granulations, the rest of the wound had healed. Drainage tube was removed, iodoform and Argantin bandage reapplied. November 21, the temperature had been normal thus far, and there had been no pain. November 22, wound was entirely healed, and united nicely.

CARCINOMA OF THE TONGUE.

A. Uiberwassir, a peasant forty-nine years of age, was admitted November 30, 1881. He had been complaining for the past four months of a stinging pain in the left half of the tongue; three weeks later, he noticed an induration, which grew steadily, but caused no pain, except in eating. Lately, the tongue ulcerated, and another painless tumor appeared eight days later, behind the left lower maxillary bone. Patient had never contracted syphilis, or any venereal affection. There was no history of hereditary diseases in the family, and he never smoked.

Present condition:

The patient was of a medium stature, well built, well fed, and otherwise normal. On the left side of the tongue, between the middle and the anterior third, there was a fungiform papilla, whoae surface was covered with lardaceous granulations. The

tumor had grown as far as, but had not affected, the glosso-palatal arch. It was impossible to ascertain how deep the tumor extended into the tongue, but the infiltration had not reached beyond the middle line. It had grown beneath into the maxilla, and was hard, though not painful. Patient had a fetid breath. Another tumor was found behind the condyle of the lower jaw. It was the size of a hazel nut, was movable, painless, and did not adhere to the skin.

Treatment.—Iodoform tampons were introduced into the mouth, after which the fœtor ceased, and the ulcerations healed.

Operation:

November 9, the patient was anæsthetized, the parts carefully cleansed, a circular incision was made over the lymphatic tumors, scraping the lower maxillary bone, and the lingual artery dissected out. The submaxillary glands, which were enlarged, though otherwise normal, were removed. The external maxillary artery was tied, as well as the lingual, seven or eight diseased lymph glands were removed, and it was found that the tumor extended to the external carotid artery, and included the internal jugular vein, so that a portion of the latter, two cent. in length, was removed between two ligatures. Iodoform gauze was applied. A speculum was introduced into the mouth, and the tongue drawn out with a hook. The tumor was now cut out with scissors, and a few remaining pieces were removed later. Half of the tongue was thus removed. There had been but little hæmorrhage, and it had been stopped with tampons of iodoform gauze. A large drainage tube was laid in the internal wound, and a smaller one laid in the external wound, iodoform dressings were applied, and covered over with oil silk waterproof cloth (McIntosh) and bandages. Patient was fed through a tube.

Course:

November 10, the temperature was 38 C. Patient was able to drink without difficulty. The dressings were removed, the drainage tube cleansed, iodoform re-applied, and dressings renewed.

November 11, no fever; patient speaks intelligibly, and drinks without pain. A fibrinous exudation had taken place in the pharynx on the edge of the wound, and it was insufflated with

iodoform. The discharge had diminished, and the general condition was good.

November 13, both drainage tubes were taken away. November 15, the tampons were renewed. The discharge had no bad odor. November 16, Lister's dressings were removed. The external wound had united, except at one point, where some discharge oozed. No more tampons had to be introduced into the mouth.

November 21, complete healing of all the wounds; patient speaks pretty well, and eats almost anything without any difficulty.

EXCISION OF THE PYLORUS.—At the meeting of the Royal Medical Society of Vienna, on December 16, Dr. Wölfler exhibited a woman upon whom Professor Billroth had performed resection of cancerous pylorus two months before. The procedure in that case differed from that of others, in that the duodenum was not at once divided, but its posterior wall was first fixed to the stomach by sutures. The operation lasted an hour and a half. Microscopic examination showed that glandular cancer existed, but that no cancer elements had yet appeared in the lymphatic glands extirpated at the same time. Dr. Wölfler also showed the woman upon whom he had similarly operated eight months before. No recurrence had taken place. Her digestion is quite normal. —*Lancet.*

SMALL-POX, as an epidemic, now seems to be retiring before the well-directed efforts of local and general sanitarians. It has made its appearance, so far, at only five localities in Tennessee, viz.: Martin, Memphis and Fayette counties, in the western; Kingston in the middle, and Galveston in the eastern division of the State. The one case at Kingston (only eighteen miles off, and the nearest to Nashville) has had none to follow in its train. It was contracted from exposure to contagion on a steamer from Pittsburg. The case recovered. So far, Nashville has not had a single case for now six years. So much for thorough vaccination.—*Southern Practitioner.*

Society Reports.

ARTICLE VI.

CHICAGO MEDICAL SOCIETY. Annual Meeting.

The Chicago Medical Society held its annual business meeting at the Grand Pacific Hotel, on the evening of April 10, 1882, E. Ingals, M.D., President, in the Chair. After the minutes of the last meeting were read and approved, Dr. James G. Kiernan was admitted to membership, and Dr. B. Rel VanDoozer, graduate of Chicago Medical College, 1868, was proposed for membership by Drs. L. H. Montgomery and Wm.E. Quine.

Also, Drs. N. N. Hurst, graduate of Jefferson Medical College, 1872, and W. C. Maull, graduate of the University of Louisville, 1869, were proposed by Drs. G. O. Taylor and E. W. Sawyer.

The Secretary, Liston H. Montgomery, then proceeded to read his annual report, as follows:

Mr. President and Members of the Chicago Medical Society: —I have the honor to present the second annual report of the present incumbent as secretary of this society, which, summarized in brief, is as follows:

During the year 18 meetings have been held, and 304 members have been in attendance at 17 of the meetings, which does not include the one to-night. There were also 99 visiting physicians; or in all, 403 persons. Compared with the number in attendance the year previous, there has been an increase of 26 members and 25 visitors; or 51 persons. The average number of members in attendance at each meeting has been about 18; of visitors 6; or a total number of 24 physicians. Eighteen members joined the society, compared to 10 who were admitted last year.

At the last annual meeting 186 names comprised the roll of

membership. Adding to this nnmber the 18 new members admitted, we have 204. This number has been decreased, however, as follows: Deaths, 3; resignation, 1; removal from the city, 3; and for obvious reasons 6 names have ceased to appear on the membership list. This deficiency of 13, then, leaves a corrected list of 191, and no less than this number of postal card announcements have been issued for each meeting. The following comprise the list of papers that have been read, many of which are of a high degree of merit, and as such are recorded in the minutes of the society:

(1) "Vaccination, and Varieties of Virus now in Popular Use."—Oscar C. DeWolf.

(2) "Rotheln, or German Measles."—Chas. W. Earle.

(3) "Numbers and Measures, with Scientific Corrections, with Reference to Dispensing Medicine."—F. M. Weller.

(4) "Report of a Case of Maternal Mother's Marks."—H. D. Valin.

(5) "Cremation."—Chas. W. Purdy.

(6) "Some Impressions of the International Medical Congress of 1881; being Personal Observations on the Section on Gynæcology and Obstetrics."—DeLaskie Miller.

(7) "Is there a Chronic Carbolic Acid Poisoning?"—Edmund Andrews.

(8) "Model of an Astygmatic Eye, demonstrating the Refractive Condition of the Organ."—Lytton Forbes.

(9) "Report of Cases in Ophthalmology."—E. L. Holmes.

(10) "Operation for the Total Extirpation of the Uterus (through the Vagina) with Recovery."—Chr. Fenger.

(11) "Predisposing Causes of the Alcoholic and Opium Habits."—Mary H. Thompson.

(12) "Disposal of the Dead."—W. H. Curtis.

(13) "Report of a Case where a Large Splinter of Wood had been Buried in the Superior Maxillary and Zygomatic Fossa for Fifteen Months, with Operation for Removal and Recovery."—Roswell Park.

(14) "Malarial Keratitis."—F. C. Hotz.

(15) "Report of a Case of Tetanus caused by a Foreign Body in the Orbit."—F. C. Hotz.

(16) Management of Parturition."—Ephraim Ingals.

(17) "Opening and Drainage of the Large Joints in Suppurative Synovitis."—Chr. Fenger and E. W. Lee.

(18) "Health Resorts."—Chas. E. Davis.

(19) A Report on the Treatment of Fifteen Cases of Typhoid Fever.—H. D. Valin.

(20) Fracture of the Frontal Bone, resulting in Necrosis of the Cranium."—John Bartlett.

(21) Supra-Malleolar Osteotomy."—Chr. Fenger and E. W. Lee.

(22) "Simulation of Insanity by the Insane."—James. G. Kiernan.

But few special committees has it been found necessary for the President to appoint, hence work in this direction has been limited during the past year. Especial mention is due, however, to the memorial committee appointed a few weeks since, who prepared a biographical sketch, with appropriate resolutions, of a deceased member. And the same compliment will apply to the committee which subsequently presented the "series of resolutions" to a near relative of the deceased.

To recapitulate, then, in a word: One more meeting has been held during the past year, and two more papers presented, than has been done before in some years, to our knowledge. The membership has been actively increased, and the Chicago Medical stands as the banner medical society of the city, the Illinois State Society excelling it only in numbers, not in talent, as many of our members belong to that body, as well as to the American Medical Association. During the past year, we were represented at the International Medical Congress that was held in London, and our delegates were received in medical and surgical associations in many other of the great European cities besides. At home, we were represented at the meeting of the American Public Health Association held at Atlanta during the latter part of the year 1881, and thus, has our influence been extended over a pretty broad expanse.

Before closing this report, your attention is invited to dwell upon two or three suggestions, which, if carried out, would, I trust, aid my successor in performing and lessening the duties of

the secretaryship very considerably, and aside from this, as a member of the society. Our business would be transacted in a more general, professional manner, if we held our meetings once a month (say on the evening of every third Monday), and to do so the entire year around, for it is apparent to each of you, that the attendance after the vacation of the summer months, does not regain itself to that point which was previously the case before adjournment. Second. With the initiation of every new member, I would favor the plan of their being required to read, within three months from the time of their admission, an "inaugural thesis," as much, indeed, as annual dues should be exacted. To my mind, one or the other of the above methods (perhaps the latter plan) is an essential one, and an important step in the right direction.

In the discussions, I am sure none during the past year could have felt more at ease, for our worthy President did his part to have us all know that formality was not the popular method of discussing topics, and on a number of occasions, it was especially desired that practical suggestions should be advanced by new members in participating, who otherwise would not have done so, had not their views been solicited.

History informs us that this is our thirty-second year of existence, and our annual meeting one year hence will constitute the ter-centennial anniversary. Let us emulate somebody, if we cannot do it otherwise, and inaugurate a graceful custom of celebrating this ter-centennial anniversary of the society by having a splendid oration delivered (one gotten up expressly); and, as banquets seem to hold a high plane on the surface of æstheticism, close the business and exercises of the annual meeting with a fine banquet, etc., etc.

And now, before retiring from the distinction of secretary of this society, I wish to thank the members for courtesies extended, and my only regret is that I have not served you better, and that greater triumphs and achievements have not been the result; but which, I hope, are within the near future.

All of which is respectfully submitted by

LISTON H. MONTGOMERY, M.D.

Dr. C. T. Fenn moved that the secretary's annual report, just read, be accepted and adopted; also that a committee of three be appointed by the chair, to take action on the recommendations embodied in the report. The chair then appointed Drs. A. R. Jackson, R. G. Bogue, D. W. Graham, J. H. Hollister, committee. The chairman was appointed on the motion of W. H. Curtis, thus making the committee five in number, instead of three, as the original motion called for.

The treasurer, Dr. E. F. Ingals, presented his report, which is as follows:

RECEIPTS.		
April 4, 1881, cash on hand	$156.32	
April 4, 1881 to April 10, 1882, collections of annual dues and initiation fees	323.00	
		$479.32
EXPENDITURES.		
April 7, 1881, paid J. B. Drake & Co. for use of rooms	$50.00	
April 4, 1881, to April 10, 1882, stationery, postage and writing	15.35	
April 4, 1881, to April 10, 1882, printing and postals for notices of meetings	61.00	
Paid collector commissions on delinquents	6.90	
		$133.25
Leaving balance on hand		$346.07

The financial report was, upon motion duly seconded, adopted. A list of names was then read by the treasurer who were indebted to the society for two or more years' annual dues. Upon motion of Dr. L. C. Waters, that these members be expelled for non-payment came near being carried, when it was modified by carrying out article IV of the by-laws, which reads that their membership in the society is declared forfeited.

The election of officers was then proceeded with. Dr. G. C. Paoli moved, duly seconded, that the first ballot for President be informal. The following names, with the number of votes, was the first result:

Whole number of votes cast for President was 32—A. R. Jackson, 5; J. H. Hollister, 9; D. W. Graham, 6; E. Ingals, 4; DeLaskie Miller, 3; F. C Hotz, 3; G. C. Paoli, 1. Drs. Miller, Graham, Jackson and Ingals declined with thanks, when Dr. J. H. Hollister was chosen unanimously on the first formal ballot as President.

First ballot for Vice-President resulted as follows:

Whole number of votes cast, 33—D. W. Graham, 7; Emma Gaston, 15; A. H. Foster, 5; DeLaskie Miller, 2; S. J. Jones, 1; M. H. Thompson, 1; R. G. Bogue, 1; L. C. Waters, 1. Dr. Emma Gaston declined with thanks, and the second ballot resulted in Dr. D. W. Graham's receiving the majority, and he was declared elected Vice-President.

Firt formal ballot for Secretary was as follows:

Whole number of votes polled, 33—L. H. Montgomery, 20; C. W. Purdy, 1; A. P. Gilmore, 1; E. J. Gardiner, 6; L. C. Waters, 1; H. D. Valin, 1; A. H. Foster, 3. When the result was announced, Dr. L. H. Montgomery was declared elected to the secretaryship.

Upon motion of one of the members, the Secretary was authorized to cast the vote of the society for Dr. E. Fletcher Ingals, as Treasurer, which was accordingly done.

The new President was invited to take the chair, when the retiring President, Dr. E. Ingals, spoke as follows:

"I am glad of the opportunity to thank the members of the society for having, by their acts during the year, made the duties of its officers pleasant and easy. The history of the society, both in numbers and influence, was never before as good as it is to-day, and this will be advanced by every recurring year. When the last of our circle is gone, I doubt not this society will remain, and the labor we each individually give it will become a part of its history, and the influence we exert upon it may be so incorporated into its structure as to survive after our very names may be forgotten. But though we have done well, we have done less than we ought. Every one worthy the name of a physician owes much to his profession. All scientific organizations which have its advancement for their object should receive their hearty support, and especially should our medical teachers contribute generously to their transactions. It is true, many individual engagements demand their attention, but they should not neglect society work. Where much is given, much should be required. By a more thorough performance of their duties in this matter, they would greatly benefit the profession, and in return they would be benefited themselves—possibly in a still greater degree, for it is the

law of all labor that the greatest reward is to him who does the work, for the reason that such work strengthens and improves the mind and builds up the character, and these results have worth above and beyond all that is external and transitory.

"Chicago is already among the important medical centers of this country, and we should each of us aid as much as we may to give it a more excellent rank. The names of the best known medical men of this nation constantly appear in the transactions of the various scientific associations of the large Eastern cities, and the credit they are to the profession is reflected upon themselves.

"Chicago is outgrowing its childhood, and it should make its manhood known by its works. That it will do this I have a firm assurance, and let us all, individually and collectively, help to push forward the good work."

A motion by Dr. F. M. Wilder was duly seconded, that the thanks of the society were due the retiring President, and all the other officers, and should be spread upon the records, for their services. Carried.

Dr. E. Ingals then moved that $50 be donated to Mr. John B. Drake for the use of the parlors the past year—also that a token of regard in the form of $25 be voted the Secretary. Both motions were carried unanimously.

Dr. D. W. Graham, on behalf of the memorial committee appointed a few weeks ago, offered the following report on necrology:

Dr. James Allen Mead was born in Otsego county, New York, February 8, 1841. He died in this city February 16, 1882, after an illness of two weeks, of typhoid fever. He received a common-school education in his native place, and took an academical course at Cazenovia, N. Y.

Eighteen years ago he came to Chicago, and engaged in the retail drug business. He studied medicine in Rush Medical College, and graduated in 1876. The last two years of his life were spent exclusively in the practice of medicine, in which he had a good measure of success. He became a member of this society in 1881. Your committee, in addition to the foregoing history, would respectfully offer the following resolution, as ex-

pressing the sense of this society, and ask that it be spread upon the records:

That in the death of Dr. Mead, this society, and the medical profession, have lost a worthy member, whose private and professional life were characterized by the highest honor and integrity.

JOHN BARTLETT,
G. C. PAOLI,
R. C. HAMILL,
D. W GRAHAM,
} Committee.

The committee on membership and miscellaneous business, consisting of Drs. G. C. Paoli, J. H. Etheridge and E. L. Holmes, was continued.

The hour was deemed too late to hear the papers read, as announced, hence a motion to defer their reading until next meeting was carried.

The society then adjourned.

LISTON H. MONTGOMERY, *Secretary.*

ARTICLE VII.

CHICAGO MEDICAL SOCIETY.

Stated meeting, April 17, 1882. Dr. J. H. Hollister, President in the chair.

After the reading of the minutes of the last meeting, by Dr. L. H. Montgomery, secretary, Dr. Hollister read a carefully prepared paper, on the recent prevalence of typhoid fever in Chicago. The questions briefly discussed were, (*a*) What is Typhoid Fever? (*b*) How is it developed? (*c*) What is the manner of its propogation? (*d*) How may we account for its recent prevalence in Chicago? (*e*) What means are available for its control?

Typhoid fever was not, as its name implied, closely allied to Typhus fever, although it was more than a constitutional disturbance caused by a local lesion, and the whole system seemed to suffer from the presence of a specific typhoid poison, which also accompanied anatomical lesions through its entire course.

The lesions in the disease might be divided into two groups: The first seemed to represent the more or less direct effect of the typhoid poison as found in Peyer's patches, in the solitary glands, in the mesenteric glands and in the spleen, involving the lymphatics of the intestinal canal. In the second group, those affections were found which resulted from the general disease. These were mainly the parenchymatous degeneration which in extent and intensity, depended upon the severity and the continuance of the general disease, notably the fever. These degenerations were found most frequently in the liver, the kidneys, the voluntary muscles, and the muscles of the heart, in the brain and the lungs, and the mucous membrane may also be the seat of tissue degeneration if the case were long continued and severe. The lesions of the intestine had been a matter of constant and interesting study. The agminated glands of Peyer became involved as though the specific poison at this particular portion of the alimentary canal sought entrance to the general circulation and here first produced its characteristic effects.

The author of the paper, here exhibited some well-prepared specimens, and described with minuteness the pathological changes that occurred during a four weeks' course of the disease, *i. e.*, where cicatrization was perfected and convalescence had been established. The decomposition of organic matter undoubtedly contributed more to originate the disease than any other single cause, but it must be a specific form of poisoning from animal matter, and especially dependent upon the decomposition of feculent discharges of human product. Filth and decomposition tended strongly to intensify the disease once developed, and the same was true of defective sewerage.

Regarding the manner in which typhoid fever was propagated, it was not disseminated by simple contact with persons having the disease, and therefore it must develop from a miasm outside the human body. In superficial vaults and cesspools the specific poison might multiply itself to an incredible extent, infecting the earth, the air and water, and the vitality of the poison could maintain itself for a longer time than could the specific poison producing cholera.

During the last eight months, 572 deaths from typhoid fever occurred in Chicago—in Cook County Hospital, where 100 cases were treated, 16 died. This ratio made the probable number of cases of typhoid fever in the city during the last eight months, 3,575. The fifth, sixth, ninth and fourteenth wards had by far the largest representation. The fatality of typhoid fever gave warning of what was in store for us if the sanitary conditions of the city were allowed to remain as they were—and the means available for the control of the disease, were for the authorities to see that the tunnels were kept free from contamination with drain and shore pollutions; and the sewers must be looked to. The Illinois and Michigan Canal should be utilized for the drainage of Chicago.

Dr. N. S. Davis remarked that there had been 143 deaths from typhoid in eight months, from April to December, 1880; that there had been 520 deaths from the same cause in the corresponding months in 1881. The Doctor highly recommended iodine in the treatment of typhoid fever.—See the JOURNAL for February, 1882.

Possibly we had in iodine a general alterative, not depressing in character, and also an antiseptic. Bromine, he had used years ago; it actually diminished the disease, but it was difficult of administration on account of its pungency. He considered iodine the leading remedy. He used it for the last six months in hospital and private practice, together with some other remedies, turpentine emulsion, sponging, the wet sheet, etc. In 27 cases, one died, but the disease had become complicated by bronchopneumonia and laryngitis. The Doctor gave iodine in the following manner:

℞ Iodini.....gr. viii.
Potassii iodidi.....gr. xxx.
M. Aquæ distil..... ..... ℥jss.

S. 12 to 15 drops in sweetened water every three hours, for three or four consecutive days.

Dr. J. G. Kiernan read a paper on the occipital lobe in relation to intelligence, in which he called attention to the fact that the importance of the frontal lobe has been much over-estimated. He claimed that in the occipital lobe were to be found the great

ssociation centers of the brain, and as upon these depended man's intelligence, the full development of the occipital lobe was necessary to constitute a well-balanced cerebral system. He cited as corroboratory evidence the fact that the occipital lobes occur only in the primates, being absent even in the lower monkeys, whereas frontal lobes are found in all mammalia, and the fact that the occipital lobes are the last to make their appearance in the fœtus. The occipital lobe was markedly deficient in the reasoning maniacs. In this connection the cast of Guiteau's head was exhibited, which was described as being very exact, and upon inquiry, Dr. Kiernan stated that Guiteau's skull is three times the usual amount of asymmetry.

Dr. D. R. Brower followed with some interesting remarks, in which he quoted Dr. Gray, of the Utica Asylum, as having stated as an expert, at the trial of Guiteau in Washington, that the criminal's skull was of a normal asymmetry.

MEETING OF MAY 1.

Dr. F. C. Hotz reported some typical cases of malarial inflammation of the middle ear. His treatment consisted in giving from three to five grains of quinine four or five times a day, and the cure was complete in a week, and the hearing restored to its primitive condition.

Dr. J. H. Hollister had noticed, as a secondary result of malarial fever, that the secretory membranes were all liable to be affected, and it was a matter of importance to him to see that Dr. Hotz, in his paper, had specialized that morbid action in its relations to the ear.

Asked if the disease was neuralgia, Dr. Hotz answered that it was rather inflammatory and constitutional, and that the impairment of hearing was greater than in ordinary local inflammations.

Dr. Clark remarked that nine-tenths of the cases of pain and buzzing in the ears were referred by the patients to a previous use of quinine, and he believed in such a connection between the two; he knew of some persons who were unable to take that medicine, even in small doses, on account of the buzzing occasioned thereby.

Dr. Rosa Engert related a case of malarial fever in the course of which acute otitis took place, followed by a free discharge of

pus. The patient was kept on quinine, two or three grains at short intervals, and made a good recovery, the ear healing in a short time.

Dr. W. T. Montgomery had seen two cases which he classed as malarial otitis, although not very typical in character. A free discharge of pus from the ear was taking place when he saw them. Hot water, astringents, local blood-letting and the various means used in such cases failed to give any relief, and seemed to aggravate the disease. After a few days he gave large doses of quinine, which brought speedy recovery. The treatment in these cases had been the only means of furnishing a diagnosis.

A case resembling the above was reported by Dr. Gardner. A lady who had had malarial fever years ago had subsequently suppurative otitis, with inflammation of the mastoid cells. The disease stopped in her right ear, but in the left it remained stationary. He was called to see the patient after she had had a chill, and he gave three grains of quinine four times a day, which brought on recovery. Dover's powders were also given. Three months later another attack of chills and fever set in, for which he gave quinine, followed with speedy recovery.

Dr. S. J. Jones said we were all well aware of the complications which may accompany malarial fever. He had noticed that the preceding cases were chronic, hence liable to be aggravated by various causes. He had yet to see his first case of malarial otitis. In most cases, he thought, there had been exposition, and their various symptoms were complications and aggravation from malarial irritation. He should look at the related cases as such. We knew very well the beneficial effects of quinine under the circumstances, but any tonic would also give similar results. The periodicity of the attack was not a sufficient proof. He had seen permanent impairment of hearing follow the use of quinine. As to the cases of malarial otitis related, he believed that malarial poisoning had much to do with them, but he would not class them as malarial, except as complications.

Dr. E. Ingals said that it was an old observation that quinine affected the ear markedly, impairing the hearing when given in large doses. The practice had been confined to a malarial district, but he was so convinced of the ill effects of quinine that he

always gave it in rather small doses, and never gave it in cases where the hearing was in any way affected.

Dr. Hotz, reviewing the criticisms passed on his reports, said that he certainly did not mean to state that any case of otitis relieved by the administration of quinine was malarial. In almost all cases of chronic catarrhal inflammation he would agree with Dr. Jones; but as to the typical cases, their existence could not be denied. The fact that under ordinary treatment these cases had gone from bad to worse, while the antiperiodic use of quinine brought immediate relief after a case of this nature had extended over months, and healed in a week with quinine, was sufficient evidence to separate it from ordinary catarrhal inflammation. Those cases *do not* get along as well with other tonics, nor did he consider quinine a tonic in such doses and in such cases.

There were cases of inflammation of the ear, purely local, without constitutional disturbances, which he had seen heal without treatment. He had also seen cases in which syringing had been kept up a long while, get better after stopping all treatment.

INSANITY FROM TRAUMATISM.

Dr. William P. Verity, ex-interne of the Cook County Hospital, related a case of this nature which had some medico-legal relations, as the patient committed suicide. In 500 cases of insanity observed by Dr. Kiernan, 49 were classed as traumatic. In these dull pain, fainting, delirium, immediate or subsequent, had occasionally taken place. There had been a tendency to brain congestion, noises in the ear, and in a few cases changes in the pupils and in the smell. There had been outbursts of temper, and, in fourteen cases, attempts at suicide. The prognosis was unfavorable. Certain psychoses were liable to form, the majority of which ended in progressive paresis. Heredity had very little to do with it. Injuries to the brain before the age of forty were more liable to give rise to such diseases than when taking place later. Some cases had well marked delusions.

The case which came under the observation of Dr. Verity was that of a man fifty years old, who had previously enjoyed good health. He was industrious, drank beer moderately, and was careful of his personal appearance. On December 3, 1878, he was thrown on a truck by an engine, and his head hit on one

side. He afterward felt pain in that part of his head; he became disinclined to work; his sexual appetite, hitherto moderate, increased, and he became intemperate. He had tinnitus aurium, and became loquacious. December 24, 1881, he struck his wife, and some people tied him down for the night. The next morning, the influence of liquor having passed away, he still menaced to kill his wife. December 26 he hung himself and died. The autopsy showed extensive adhesions of the cerebral meninges, but the brain substance appeared normal. Dr. Verity pronounced the case one of traumatic insanity.

Dr. Kiernan agreed with the author of the paper in his diagnosis, but he did not believe the title quite fitted to represent that class of mental diseases. He was convinced of the fact that very slight injuries had a great bearing on the types of insanity subsequently developed in such cases. Lesions were not always discernible, though probably always present.

Dr. E. Ingals asked whether suicide was not a definite proof of insanity in every case.

Dr. Kiernan was persuaded that he had met sane suicides.

The President related a case of traumatic insanity also.

ARTICLE VIII.

CHICAGO BIOLOGICAL SOCIETY. Stated Meeting, April 5, 1882. Dr. C. Fenger, President, in the Chair.

The minutes of the last meeting were read by Dr. Lester Curtis, in the absence of the Secretary, Dr. Roswell Park, who has gone to spend the summer in Europe.

The paper of the evening was read by Mr. E. B. Stuart, associate editor of *The Druggist*, and had the title: "The Nature and the Affinities of Certain Submerged Fungoid Growths." (Published in this number of the JOURNAL.)

Discussion.—Dr. Plim. S. Hayes asked the lecturer whether boracic acid would prevent the growth of fungi in alkaloidal solutions, and was answered in the affirmative.

Dr. C. Fenger remembered a proprietary article called *asepsine*, which had been sold extensively for destroying molds, and

which contained nothing but boracic acid. Dr. Fenger said that the subject of organic germs was acquiring an important notoriety of late. He classed the forms known as aspergillus and mycelium among fungi.

As to their relation to pathological processes, but little yet was known. The first of them found to be harmful was *oidium albicans*, which causes in children the disease called thrush or muguet. This fungus was thought harmless at first, but it was subsequently found that in rare cases it had extended to and covered the walls of the stomach. The fact was also noticed that sometimes molds had been found growing in the external ear of persons who had slept near damp walls, and the fungus was supposed to have come from the walls.

The next form investigated was a dangerous one, and caused the disease called *actino-mycosis*, which resembles pyæmia. It was supposed to start its growth in some hollow teeth, thence extending in small abscesses to the submaxillary and other glands, and from there extending to and starting abscesses in the various parts of the body, causing death through pyæmia. These fungi were visible to the naked eye, the pus from the abscesses containing small grains resembling seeds. A plain mycelium was seen under the microscope. The theory was, as to those cases, that they always started from hollow teeth, though but little was known about them. These were all the fungi known to have multiplied in the human body.

Of late, however, experiments had been made with various fungi, the *Penicilium* and others, and, after they had been cultivated in certain manners, they were injected into the lower animals, dogs and rats, and in a great many cases the animals died in two, three, or five days. At the autopsy, small visible plaques were found in the kidneys, and under the microscope the mycelium of the fungus was always present.

However, these experiments were not perfect, and unimpeachable, for it had not always been possible to exclude any other form of fungi from those under observation.

Dr. Fenger should not wonder if the fungi studied by Mr. Stuart, under some circumstances, might be injected into the blood and there multiply. Although there were no cases on

record pointing to that view, this should not stop researches, which were so meagre on that subject. It was a matter of some importance whether by the use of muddy solutions of alkaloids with a hypodermic syringe, some fungi would not be injected into the blood of patients.

In cases where patients died after the use of hypodermic injections, it would be well to look for plaques of mycelium in the kidneys and other viscera.

Mr. Stuart said that, as to the growth of fungi (saprolignæ) on animals, it was not infrequent. Flies were attacked that way, and so were certain fishes. These fungi might grow in the blood of other animals also, especially the warm-blooded, as a higher temperature was specially favorable to their growth. He had noticed that the spores of certain fungi, furnished with two filaments, had an individual motion, and sought the interior of tissues where to grow, as if they had been endowed with volition, and he looked upon them as possessing some intelligence, involving choice.

ARTICLE IX.

AMERICAN MEDICAL ASSOCIATION, PHILADELPHIA, No. 1400 PINE ST. The Thirty-third Annual Session will be held in St. Paul, Minn., on Tuesday, Wednesday, Thursday, and Friday, June 6, 7, 8, 9, 1882, commencing on Tuesday, at 11 A. M.

"The delegates shall receive their appointment from permanently organized State Medical Societies, and such county and district medical societies as are recognized by *representation in their respective State Societies*, and from the Medical Department of the Army and Navy, and the Marine Hospital Service of the United States."

"Each State, County, and District Medical Society, entitled to representation shall have the privilege of sending to the association one delegate for every ten of its regular resident members, one for every additional fraction of more than half that

number; *provided*, however, that the number of delegates for any particular State, territory, county, city, or town, shall not exceed the ratio of one in ten of the resident physicians who have signed the Code of Ethics of the Association."

Secretaries of medical societies as above designated are earnestly requested to forward, *at once*, lists of their delegates.

SECTIONS.

"The chairmen of the several sections shall prepare and read in the general sessions of the association, papers on the advances and discoveries of the past year in the branches of science included in their respective sections. * * *"—By-Laws, Art. II., Sec. 4.

Practice of Medicine, Materia Medica, and Physiology—Dr. J. A. Octerloney, Louisville, Ky., chairman; Dr. D. J. Roberts, Nashville, Tenn., secretary.

Obstetrics and Diseases of Women and Children—Dr. H. O. Marcy, Boston, Mass., chairman; Dr. C. V. Mottram, Lawrence, Kan., secretary.

Surgery and Anatomy—Dr. ——— ———, chairman; Dr. W. A. Byrd, Quincy, Ill., secretary.

State Medicine—Dr. A. L. Gihon, U. S. Navy, chairman; Dr. J. H. Sears, Waco, Texas, secretary.

Opthalmology, Otology, and Laryngology—Dr. —— ———, chairman; Dr. J. Solis Cohen, Philadelphia, secretary.

Diseases of Children—Dr. S. C. Busey, Washington, D. C., chairman; Dr. William Lee, Baltimore, Md., secretary.

Dentistry—Dr. D. H. Goodwillie, New York City, chairman; Dr. T. W. Brophy, Illinois, secretary.

A member desiring to read a paper before any section should forward the paper, or its *title* and *length* (not to exceed twenty minutes in reading), to the chairman of the Committee of Arrangements at least one month before the meeting.—By-Laws.

Committee of Arrangements—Dr. A. J. Stone, St. Paul, Minn., chairman.

Amendments to the By-Laws—Offered by Dr. D. H. Goodwillie: Art. II., Sec. 8. Permanent members. Strike out the words "but without the right of voting."

Offered by Dr. J. H. Packard: Regulation II., part I., to read "as permanent members or members by application."

Regulation VI, line 4. Strike out 5 and insert 10. Second paragraph, lines 4 and 5, strike out all after "publication" to and including "association," and insert "publication."

Regulation IX. Add new paragraph: "Members by application shall consist of such members of State and county societies, in good standing, as shall make application in writing for admission. They shall simply have the right to receive the JOURNAL on the same terms as other members."

Regulation IV, paragraph 6. Strike out all from "see," in line 7, to "and" in line 9.

Regulation V, paragraph 3. After "published" insert "in such manner as the association may direct."

WILLIAM B. ATKINSON, M. D.,
Permanent Secretary.

ARTICLE X.

MICHIGAN STATE BOARD OF HEALTH.

Reported for the CHICAGO MEDICAL JOURNAL AND EXAMINER:

The regular quarterly meeting of this Board was held at Greenville, Michigan, on April 11, 1882, in connection with the Sanitary Convention held at the same time and place. The following members were present: Rev. D. C. Jacokes, of Pontiac; J. H. Kellogg, M. D., of Battle Creek; Arthur Hazlewood, M. D., of Grand Rapids; John Avery, M. D., of Greenville; Henry B. Baker, M. D., of Lansing, secretary. William Oldright, M. D., chairman, and J. J. Cassiday, M. D., members of the newly appointed Provincial Board of Health of Ontario, were present, and were invited to take seats in the meeting. In the absence of the president of the board, Dr. Jacokes presided.

The secretary presented the subject of inspection of immigrants, and stated that the National Board of Health had granted the request of this board for an inspection service at

Port Huron, and the system would go into effect on May 1, at which time the whole system, by coöperation of several State Boards of Health, would go into effect. He suggested that the health authorities of Toledo and Cleveland be invited to join in this movement. He stated that at the meeting of the Sanitary Council of the Mississippi Valley, at Cairo, Ill., April 19, this subject would be considered, and that it was desirable that this board be represented at that meeting. By vote of the board, Dr. Baker was requested to represent the board at that meeting. Dr. Oldright spoke of the inspection of immigrants at Toronto, and of the importance of notification to other boards of danger to be feared from immigrants. He also said any movement made by this board would meet with hearty coöperation by the Ontario Board. He said the work done by this board for the restriction of scarlet fever and diphtheria was fully as important as that for the restriction of small-pox.

The following motion was carried:

That the secretary be instructed to correspond with the health authorities of the Dominion of Canada and the several provinces thereof, and of provincial and municipal boards of health where they exist, asking their coöperation in the proposed immigrant inspection service.

Dr. Hazlewood read a proposed document giving best household antidotes to be used in case of poisoning, while waiting for a physician, or when one is not to be had. It was accepted and the committee authorized to modify it before publication in the annual report.

Dr. Hazlewood, Committee on Poisons, etc., presented a letter from Dr. Gordon, of Swartz Creek, relative to lead-poisoning by use of a feeding-bottle (which was exhibited to the board), in which the sinker keeping the supply pipe in the milk, was of lead, and so arranged that all the milk had to pass over it before entering the infant's mouth. The secretary was requested to notify the manufacturer of the pernicious character of the bottle, and the report was accepted and ordered published in the annual report.

Circular 35, revised, relating to the duties of health officers,

was presented, adopted and twenty thousand copies ordered printed.

Dr. Kellogg, as special committee to prepare a circular on criminal abortion, made a report and read a proposed circular. The report was accepted, the committee continued, and the subject of issuing the circular laid over.

Dr. Kellogg was requested to represent the board at the meeting of the American Medical Association at St. Paul.

The next meeting of the board will be on Tuesday, July 11, 1882.

ARTICLE XI.

ALUMNI ASSOCIATION OF THE CHICAGO MEDICAL COLLEGE.

The annual meeting of the Alumni Association of the Chicago Medical College took place Tuesday, March 28, at 2 P. M. After an address by the President, Dr. D. A. K. Steele, and the Necrologist's report, by Dr. F. E. Waxham, the following prizes were distributed:

Senn prize, for best anatomical preparation, by a student of Chicago Medical College, one volume Surgery. Taken by E. Wing, M. D.

Prize for highest average scholarship for three years in Chicago Medical College. Taken by W. E. Morgan. E. Wing and E. L. Hollister followed closely on the college list.

Edwards' prize, for best scholarship in second year class, one set Wood's Library. Taken by N. S. Davis, Jr.

Alumni prize essay, for best Thesis. Taken by M. P. Hatfield, M. D. Subject: Prophylaxis and Treatment of Dyspepsia of Infants.

After music, the society went into executive session. The following list of officers was elected:

President—M. P. Hatfield, of Chicago.

First Vice President—A. J. Smith, of Indiana.

Second Vice President—Charles Goddard, of Illinois.

Necrologist—F. E. Waxham, of Chicago.

Secretary and Treasurer—H. T. Byford, of Chicago.

Dr. Roswell Park moved that the resolution of last year concerning the prize essay be continued. His motion was carried. Following is the resolution:

Resolved, That the Chicago Medical College Alumni Association set aside the sum of $50 as a prize for the best essay on either one of the subjects to be selected by a committee of three. Such essay must be of sufficient merit, preference being given to original work and observation. Essays are to be handed to the secretary of the association before March 1, 1883, accompanied by a sealed envelope containing some device or motto similar to the one on the manuscript. All competitors shall be graduates, and have paid the annual dues. Award will be made by the Permanent Committee of Prizes—Drs. N. S. Davis, H. A. Johnson and E. O. F. Roler.

ADVANCING THE STANDARD.—There is no doubting the fact that the standard of qualifications for graduation in the medical schools of this city (New York), has materially advanced within the past few years. The system of examination is more rigid than at any time heretofore, and great pains are taken to prevent the graduation of unqualified persons. Written examinations are the rule; the questions given are selected with remarkable care, and a given standard is strictly enforced by a direct vote of the faculty on the papers of each candidate.—MED. REC.

In these particulars, Chicago is not behind New York.

DEAFNESS IN SCHOOL CHILDREN.—At the request of the Commissioner of Education, Dr. Samuel Sexton has made some investigations regarding the prevalence of deafness among school children, its causes and prevention. He examined 570 pupils in the public and parochial schools of New York City. In seventy-six persons, or about thirteen per cent., there was greatly diminished hearing in one or both ears. In only one case had any deafness been suspected previously either by teacher or pupil.—MED. REC.

Foreign Correspondence.

ARTICLE XII.

VIENNA, AHRIL 2, 1882.

EDITORS CHICAGO MEDICAL JOURNAL AND EXAMINER:—The question as to the value of iodoform in surgery (or rather as to the dangers attending its use, for in regard to its good qualities there is no essential difference of opinion) is still the subject of animated discussion. The deductions of König, as a commentary to his report of disastrous cases in recent numbers of the *Centralblatt für Chirurgie*, have called forth energetic protest from god-father Mosetig Moorhof. He says: "I have never had a case of intoxication from iodoform, although I have used iodoform dressings almost exclusively during the last four years, in the treatment of some 3,000 in-patients and about 4,000 out-patients." He explains this fortunate immunity by the facts, 1, that the iodoform is never used in large quantities (70 grams is his maximum, I believe); 2, that it is never kept in contact with the wounded surface *under pressure;* 3, that the dressing is changed only at long intervals; 4, that in changing the bandage the wound is never syringed out in order to apply fresh iodoform, because, as is known, absorption proceeds more rapidly in granulating than in fresh wounds; 5, because the iodoform is used alone, *i. e.*, without any other antiseptic. He lays great stress upon this latter measure, and denounces especially the (in Germany almost universal) combination of carbolic acid with iodoform. He refers to several cases of reported intoxication, in one of which the reporter (Höftman) says: "The scanty urine, containing large quantities of carbolic acid, first showed the presence of iodoform on the third day, after disappearance of the carbolic acid." In another (König's): "The

urine is almost black, but contains no iodine salts." Now, inasmuch as Mosetig, who does not use carbolic acid, always finds iodine in the *first* urine after an iodoform dressing; and inasmuch as carbolic acid is known to cause irritation, even inflammation of the kidneys, Mosetig is inclined to ascribe the retention of the iodine in the blood, and hence the intoxication, to the use of carbolic acid. He urges, therefore, the exclusive use of the one or the other antiseptic.

Winiwarter, in Liège, a former assistant of Billroth, has recently appeared among the champions of iodoform. He has secured all of the good and none of the bad results ascribed to the dressing, having never seen a case of intoxication. He irrigates the wound with carbolized water, and usually drains. He paints superficial wounds with a solution of iodoform in collodion.

In another of the large surgical clinics in Vienna (Prof. Dittel's) iodoform has been the staple dressing for the past year, without having caused any decided symptoms of intoxication.

Reports of pylorus resection appear not infrequently in the journals. Nicolaysen recently made one—death in twelve hours from collapse. Lauenstein, in Hamburg, recently experienced a hitherto unknown complication of this operation. The omentum was attached over almost the entire posterior surface of the stomach, and had to be largely separated from this organ, with ligature of its vessels. At the autopsy, several days later, there was found gangrene of the transverse colon. Lauenstein is inclined to assume a relation of cause and effect between the extensive detachment of omentum and the gangrene.

Rydygier, who made the first pylorus resection for cancer, recently made the first similar operation for stricture of the pylorus, with extensive dilatation of the stomach, following an obstinate gastric ulcer. The excised pylorus permitted the passage only of a number nine catheter. Patient's temperature never exceeded 39.3 C., and she was discharged cured six weeks after the operation. *Volkmann's Journal* says this is the first, "and it is to be hoped the last" performance of the operation for this pathological condition.

The recent discussion in the Berlin Medical Society of the results of nerve-stretching in general, but particularly of sciatic

stretching in cases of tabes dorsalis, has drawn general attention to the subject. Some months ago, Benedikt, of Vienna, published some startling statements as the results of his experience in twenty-five cases. Among them was the following: A classical case of tabes, patient being scarcely able to hobble with the support of two sticks. The girdle sensation, rigidity of pupils, constipation, paralysis of bladder, impotence, absence of patellar reflex, paraesthesia, were the prominent symptoms. The right sciatic was severely stretched. Two weeks later patient walked almost without staggering, with closed eyes and without support of any sort. At the end of two months after the operation, the above mentioned symptoms (except abnormality of pupils and of patellar reflex) had almost or entirely disappeared, and the patient walked a mile easily.

Some months later he entered Bamberger's wards suffering from endo- and pericarditis. Here the absence of essential spinal symptoms was determined—even the patella reflex was now present. The autopsy revealed gray degeneration of the posterior columns throughout the medulla. Benedikt obtained some pieces of the spinal cord, and announced that there were evidences of regeneration of the diseased nerve-fibers.

This communication was received with general incredulity; in some quarters even with ridicule. It seems, however, to have secured at least one important result, namely, the discussion of the subject by competent men.

Schultze, of Heidelberg, published a case of undoubted tabes dorsalis, in which all symptoms except slight paresis of the bladder and the absence of the tendon reflexes disappeared during treatment by Erb with the continued current. This improvement continued unimpaired until death, several years later, from an intercurrent affection. The autopsy showed the usual degeneration in the posterior columns.

This and similar cases prove the possibility of a clinical recovery from this affection, perhaps, as Senator suggested in the Berlin society, from a vicarious assumption by the gray matter of the duties of the posterior columns.

A most important contribution to the subject is Langenbech's report on 100 operations, mostly stretching of the sciatic and

crural nerves in cases of tabes. He observes that inasmuch as tabetic patients lose ground by keeping the recumbent posture, old, feeble, and fat persons are, for this, among many other reasons, less eligible for the operation. His experience does not confirm the rather natural *a priori* assumption that the chances of success are inversely proportioned to the stage of the disease; he has had most satisfactory results in some very advanced, and has utterly failed to improve in some very early cases. He frankly states that in the majority of cases he has seen either no benefit whatever or a merely temporary improvement follow the operation. Yet in many—some of which he reports minutely—there was a very marked and permanent improvement in all the troublesome symptoms, amounting in several cases to a practical cure.

At first he stretched with but little force and had good results; but becoming bolder, he used considerable force; in these cases he found that although immediate improvement occurred, yet in two to four months atrophy of the thigh muscles occurred. To avoid this, which he was inclined to attribute to tearing of small muscular branches, he in subsequent cases exposed the nerve at a part which gives off no branches—under the belly of the biceps. Since this change, he has never observed any considerable atrophy or paralysis of the muscles after the operation.

To avoid, so far as possible, the formation of cicatricial tissues around the nerve, the presence of which often caused unpleasant and painful after-effects, Langenbuch *cuts* all tissues down to the nerve itself. He then puts two carbolized sponges between the nerve and the fingers, to avoid local crushing. The tension must always be exerted on the central end only. He gives no directions as to the amount of force to be used, but warns against raising the patient, or even the leg, from the table by means of the nerve—a proceeding which Billroth in at least one case adopted. He insists upon antisepsis, by either carbolic acid or iodoform.

Upon rising from the bed after the immediate effects of the operation, the patient must begin systematic exercise.

Stretching of the crural nerve is more difficult, on account of its early division into branches; yet this operation has been, in

Langenbuch's hands, very serviceable in relieving the lightning pains of tabes. He advises that the division of the skin shall be limited to the integument of the abdomen, ending at Poupart's ligament.

In the discussion which followed the reading of this paper in the Berlin society, Westphal related his experience, taking a decidedly pessimistic position. Has observed some fifteen cases. In the first (1877) the result of stretching both crural nerves in a case of tabes was paralysis of both legs, bladder and rectum; severe bed-sores; transverse myelitis. In the other cases, the result was either *nil*, or a slight, transient diminution of pain. Thinks that these temporary improvements are due to purely psychical, not anatomical, processes. Westphal referred, further, to the celebrated original case of nerve-stretching by Nussbaum, for the relief of intercostal neuralgia. Some time after the publication of the asserted cure, Westphal learned, from a personal interview with the patient, that there was absolutely no improvement.

Bardeleben has performed the operation a number of times—once with complete recovery for a few weeks—subsequently relapse to worse than before. He performs the operation willingly, because "it's a good thing for the students to see."

Küster has observed two cases; one of temporary, one of permanent, improvement.

Senator is inclined to encourage the operation, although results to date have not been brilliant. Is convinced that recovery can and does occur, as in Erb's case (referred to above).

W. T. BELFIELD.

WE have just received from John H. Rauch, M. D., Secretary State Board of Health, a quantity of postal card records of vaccinations, which may be had on application at this office. We sincerely hope that the profession throughout the State will co-operate with the State Board of Health in their effort to have a complete record of vaccination.

Domestic Correspondence.

ARTICLE XIII.

MESSRS. EDITORS: In former letters, I believe, you have been made acquainted with the fact that the Massachusetts Medical Society, for purposes of local meetings and work, was long ago broken up into branch societies, according to counties. The main society meets but once yearly. The Boston branch is called the Suffolk District Society, and formerly met once per month. An effort was made last year to sustain fortnightly meetings. This did not work. The present secretary of the District Society, Dr. H. C. Haven, then proposed a division of the society into sections. Members might have the privilege of joining either or all of them. The sections thus far established are the Surgical and the Section for Clinical Medicine, Therapeutics and Pathology. Dr. Haven has pushed the matter with such vigor that the meetings of these two sections have become more interesting and active than the former meetings of the whole ever were.

The sections were to have met once in six weeks, but such is the interest already developed that the accumulated medical papers are too many for the number of meetings appointed. The order, therefore, has been changed, and the sections will meet oftener. The success of this arrangement simply shows that while men will not regularly attend meetings at which any medical topic is in order, they will closely follow up meetings at which they are sure to hear something directly in the line of their work. Both the surgical and clinical sections are well attended and extremely attractive. The general meetings of the District Society occur at regular intervals, but not so frequently

as formerly. These occasions are followed by an abundant collation, which, it must be confessed, is enjoyed by many who fail to appear at the sections. Does this happen to suggest to you that these men choose the meeting at which they also are sure to encounter something directly in the line of their thought?

I think Dr. Haven may not realize how earnestly his efforts in bringing about section work and increased activity are appreciated by the members of the sections. So far as my knowledge goes, this splitting of a local society into special divisions has never before been attempted in this State. The arrangement is far more enjoyable than the old plan for reasons which are so obvious as to require no mention.

During the past winter we have had such share of the small-pox epidemic as could find admission in the existence of the unlimited power of our Board of Health. During the year 1881 eight deaths occurred in Boston from this disease. Since the 1st of January there have been a few additional deaths. The desire for vaccination has been wide-spread. The number of persons vaccinated by the city physician has been large, and private physicians have all done the operation many times. During a few weeks of the early winter the people at large were considerably anxious in regard to what was believed to be imminent danger. This feeling, however, has subsided. In one of the suburbs we have an excellent small-pox hospital, capable of accommodating seventy-five patients. Far from being forbidding in its appearance, it resembles, in the approving language of a former patient, "a summer hotel." It has an inviting parlor, attractively furnished, and containing an organ and piano, convenient bath-rooms, and is exceedingly comfortable, especially in the rooms designed for private patients. The kitchen depart ment is well managed. During the winter the city physician has made daily visits. Free patients are as kindly treated as the private. But little medicine is given. Large quantities of milk are drank. Dieting and rest are the main treatment. But five or six patients have been under treatment at one time. The attractions and comforts of the place render it not only inviting, even to those who are obliged to leave luxurious homes, but better treatment is secured here than would be possible else-

where. In reading a very old book on inoculation, written during the last century, I came upon an account of a curious and amusing phillipic pronounced in 1722 by a London clergyman against the practice of inoculation. Partisan feeling ran very high at the time, and the redoubtable parson thundered "Against the sinful and dangerous practice of inoculation." He called inoculators "diabolical sorcerers, hellish *Venesici*, enemies of mankind." With the odd superstition so common in that day he denounced inoculation as "a very ancient art, first put in practice upon Job by the devil." "Thus we are to understand," says a sarcastic cotemporary, "that the devil was the first inoculator, and poor Job his first patient." The doughty parson further asserted that inoculation was "an anti-providential project which insulted religion and banished Providence out of the world." A magazine of the day, referring to the conceit of the witty minister, published the following couplet:

> "We're told by one of the black robe,
> The devil inoculated *Job*.
> Suppose 'tis true, what he does tell,
> Pray, neighbors, did not *Job do well?*"

The Chinese, according to this interesting book, inoculated in very ancient times, and perhaps still do, by taking three or four scabs from a small-pox patient, and placing them between a bit of musk, wrapped the whole in cotton wool. This they inserted within the nostril of the subject; into the left nostril, if a male; into the right nostril, if a female. A method which proved largely unsuccessful.

The Greeks superstiously inoculated the forehead, each arm and the breast, in order thus to secure the form of the cross. Many other curious facts are related. Inoculation undoubtedly proved a blessing to those upon whom it was practiced, but with as little doubt it is responsible for the endemic existence of the disease in Asia at the present day, especially in China, where the custom is still in force.

It is a noteworthy fact that while in Great Britain inoculation had barely secured a foothold, in Boston and other neighboring New England towns, Dr. Zabdiel Boylston, incited by the publication of the method by Cotton Mather, inoculated 280 persons between June, 1721, and the following January.

The report of the trustees of the Massachusetts General Hospital for 1881 includes the valuable statement that the public has contributed the needed sum of $100,000 for the erection and support of a Convalescent Home, a dependency of the hospital. The building, well arranged and picturesque, will be ready for occupancy this spring. It will add greatly to the curative resources of the hospital.

The trustees touch upon another matter which dire necessity has made very urgent, viz.: The need of a hospital for incurables. While every provision has been made for acute diseases and accidents, so soon as a patient proves incurable, he has no other refuge than the discomforts of his own home. Proper surroundings and good care, on the other hand, would make the remaining years of his life comparatively free from suffering. Probably no physician in Boston, who does charitable work, but has found himself unable to provide for incurable patients. This is a sad need, and the trustees of the Massachusetts Hospital have done wisely in calling for donations and legacies to be applied in establishing a department for this class of sufferers. The practice of exacting a nominal fee from all applicants (excepting the very poor) to the out-patient department, and which, as I wrote you twelve months ago, was under trial, was soon abandoned. It failed to accomplish good results, and really produced evil. In April last a person of experience was appointed to examine all applicants, in order to discover whether they were entitled to gratuitous service. Of 1,250 cases visited at given addresses, 545 were found undeserving of charitable aid. To a large number of these, however, the trustees think it would be unjust to apply the term "impostor." They feel that the aim of such investigations should be rather to prevent than detect improper applications, and very sensibly add that although the result may in some degree diminish the number of those annually treated, "it is well to remember that to judge of the success of an institution by the number of its patients, is to apply the easiest but not the most adequate test."

Another effort has just been made to open the doors of the Harvard Medical School to women. The basis of the endeavor was an oger of $60,000, the gift being conditioned upon the ad-

mission of women to the Medical Department of the University. If sufficient space remained, I would give you full details of this new attack. In a certain sense it was sprung upon the medical faculty. They were not prepared for it. But they did a heap of work in a very short space of time, and the result is that to-day the University Committee upon the Medical Education of Women presented its report to the overseers of the college. It was discussed for two hours, and then, by a dangerously close vote (13 to 12), it was decided that "in the opinion of this board it is not advisable for the University to give any assurance or hold ont any encouragement that it will undertake the medical education of women by Harvard College in its medical school." So mote it be.

BOSTON, APRIL, 1882. * *

ARTICLE XIV.

PAPAGO INDIAN AGENCY, FEB. 24, 1882.

MESSRS EDITORS:—I have just now returned from a visit to the Pima Indian Agency, and it may not be uninteresting to you to know something of them. They live on a Reserve on the Gila river, and are quite extensive farmers. Although they were primarily of the same nation as the Papagoes (my Indians) still they are different in a great many respects. There dress is quite summer-like in character, and they wear their hair long, and braided into small tails hanging down their backs. Their houses, or "kees," as they are called, are made of straw, with wooden frame work. There is a small door through which they crawl, and this furnishes the only entrance of air, or is the only means of ventilation. They have a curious door, made in the shape of a funnel, which admits the air, but does not allow its escape. I can hardly explain its philosophy. In these miserable hovels they live; eating, sleeping and sitting in the one room, for that is all they have.

The morals of these Indians, Pimas and Maricopas, are very loose. The Maricopas are fast dying out, being swept away by

the ravages of venereal disease. The Pimas are not so bad, but still the virtue of their women is not above reproach. They have at the Agency a well-organized police force, composed of the best Indians in the tribe, who arrest all turbulent, drunken, or otherwise unruly Indians. These are tried by the Agent, and sentenced to different punishments according to his judgment. The police are furnished with arms and uniforms by the United States.

At the Agency the Government has established a boarding-school for the Indians, and its success is well established. They can accommodate 750 pupils. Food and clothing are furnished the children while at school. I forgot to mention that the police are furnished weekly rations and paid $5.00 per month besides their arms and clothing.

The Pimas have many songs, which are as rare in sentiment as they are in music and tune. I will endeavor to preserve some of them and send them to you, as they are curiosities. They have many superstitions, and hold many things sacred. They think the tails of different animals and birds are efficacious in driving away certain diseases. They have, however, no medicine-men.

I remain yours sincerely,

W. G. COOK.

Tucson, Arizona Territory.

ARTICLE XV.

ILLINOIS STATE BOARD OF HEALTH,
SPRINGFIELD, Illinois, April 17, 1882.

MESSRS. EDITORS: Accompanying this, please find the schedules of questions used at the last annual examination of candidates for certificates of practice by the Illinois State Board of Health, (Chicago, April 13–15, 1882), and to which questions 80 per cent. of correct answers are required.

The numerous inquiries, both from within and without the State, as to the scope and character of these examinations indicate that the publication of the questions may be timely and useful.

It should be noted that, after the session of 1882–83, candidates will be also required to undergo an examination in the branches of a good English education, including mathematics, English composition and elementary physics or natural philosophy. Very respectfully,

JOHN H. RAUCH, M. D., Secretary.

To the Editor Chicago Medical Journal and Examiner.

ILLINOIS STATE BOARD OF HEALTH, Chicago, April 13, 1882.

Examination in Anatomy—By W. A. Haskell, M. D. 1. Name the bones of the carpus. 2. With what bones does the sphenoid articulate? 3. Describe a vertebra. 4. Describe the ligaments of the hip joint. 5. Name and describe the pronator muscles of the forearm. 6. Give the relations of the femoral artery and vein. 7. Describe the thoracic duct. 8. Give the distribution of the median nerve. 9. What is Wharton's duct? 10. Describe the liver.

Examination in Surgery—By W. A. Haskell, M. D. 1. Define inflammation. 2. What is the difference between ulceration and mortification? Between caries and necrosis? 3. What is a tumor? 4. Give illustrations of a benign and of a malignant tumor. 5. Give the treatment of mammary abscess? 6. Explain the *modus operandi* of reduction of the iliac dislocation of the head of the femur, by manipulation. 7. Give the differential diagnosis of compression and concussion of the brain. 8. Give the differential diagnosis of inguinal hernia and hydrocele of the cord. 9. Give the diagnosis of morbus coxarius—(a) During the first stage before the occurrence of effusion. (b) During the stage of effusion—the capsule of the joint remaining entire. 10. Give the general treatment of fractures of the lower extremities.

Examination in Physiology—By John McLean, M. D. 1. What is the action of saliva in digestion, and what are its chemical constituents? 2. Describe the digestion of starch and of fats. 3. Give the source and use of animal heat. 4. How is gastric juice formed, and what is its composition? 5. Explain the secretion of bile, its composition and use. 6. Explain the physiology of sleep. 7. Describe the fœtal circulation. 8. What nerves are directly concerned in the act of respiration?

9. Describe the circulation of blood in the fœtal heart. 10. What causes the sounds of the heart?

Examination in the Practice of Medicine—By John McLean, M. D. 1. What are the symptoms of variola, and its treatment? 2. How would you diagnose variola from varicella? 3. Give etiology, pathology and treatment of cholera infantum. 4. What is hysteria, and its treatment? 5. Give etiology, pathology and treatment of epilepsy. 6. Give diagnosis and treatment of eczema squamosa. 7. Give pathology, causes and treatment of typho-malarial fever. 8. Give differential diagnosis of diphtheria, and its treatment. 9. Give symptoms and treatment of leucocythæmia. 10. Give symptoms and treatment of acute idiopathic erysipelas.

Examination in Materia Medica and Therapeutics—By J. H. Rauch, M. D. 1. Classify remedial agents, broadly, by their actions and uses. 2. Name some of the principal agents in each class. 3. Name the principal urino-genital remedies, and write five prescriptions, embracing a different one in each. Give the indications intended to be met by each prescription. 4. What alteratives, emetics and cathartics are indigenous in Illinois? 5. Give the sources, active principles, two or more officinal preparations, and uses of (a) camphor; (b) ergot; (c) nux vomica; (d) opium; (e) physostigma. 6. Describe the therapeutic uses of the bromides, and write prescriptions for each of three of them, with indications. 7. Mention some of the most important recent additions to the materia medica, with their uses. 8. Give the therapeutic uses and applications of *aqua fluvialis* or *fontana*. 9. Mention the different officinal preparations of antimony. 10. Give the doses of (a) ammonii phosphas; (b) iodoformum; (c) strychniæ sulphas; (d) acidum boracicum; (e) extr. belladonnæ alc.; (f) atropiæ sulphas; (g) resina podophylli; (h) tr. aconita rad.; (i) extr. gelsemii fld.; (k) acidum hydrocyanicum dilutum.

Examination in Hygiene—By J. H. Rauch, M. D. 1. Give the prophylaxis of small-pox, and the measures to prevent its spread on the appearance of the first case. 2. To what extent should vaccination be made compulsory in the United States, and why? 3. What is "ground-water," and what is its agency

on health? 4. Describe the principal disinfectants, their applications and modes of use. 5. Formulate a set of rules for school hygiene. 6. What is "sewer gas," and what evils are ascribed to it? 7. Give the differential diagnosis, for sanitary purposes, of (a) scarlatina; (b) rubeola; (c) varicella; (d) variola; (e) febris flava; (f) cholera Asiatica; (g) trichiniasis. 8. Describe vaccination and its progress through the different stages; the effects ascribed to it; its complications; and the ages at, or conditions under, which it should be repeated. 9. What are the chief causes of an excessive mortality, and their remedies? 10. Describe Pasteur's recent experiments.

Examination in Medical Jurisprudence—By J. H. Rauch, M. D. 1. At what age is the fœtus viable, and what are the signs and indications of such age? 2. What precautions—other than for the safety of the subject—would you observe in the exhibition of an anæsthetic, and why? 3. How would you determine whether lesions, injuries or discolorations, found on a cadaver, were produced before or after death? 4. What is the course of procedure in the commitment of persons to an insane asylum in this State? 5. Has the registration of vital statistics any legal bearing, and, if so, what?

Examination in General Pathology—By R. Ludlam, M. D. 1. Give a definition of disease. 2. What is the difference between a predisposing and an exciting cause of disease? 3. Name the means employed in physical diagnosis. 4. What is meant by "a qualified prognosis?" 5. What forms of inflammation are reparative? 6. How would you recognize the cancerous cachexia? 7. What diseases are incident to the hæmorrhagic diathesis? 8. In what diseases do we often find albumen in the urine? 9. What form of erysipelas is inoculable? 10. Why do attacks of pelvic and portal congestion frequently alternate with each other?

Examination in Gynæcology—By R. Ludlam, M. D. 1. What are the uses of the uterine sound? 2. What diseases are accompanied by an increased depth of the womb? 3. In constipation, with or without hæmorrhoids, which ovary is most frequently inflamed, and why? 4. What intra-pelvic inflammation is most frequently rheumatic? 5. What diseases are fol-

lowed by fixity, or anchorage of the uterus? 6. Name the most frequent cases of menorrhagia in women who have had one or more children. 7. Define a menstrual headache, and give the treatment for it. 8. What are the sources of puerperal traumatism, and what are the most serious lesions that may result from it? 9. In a lying-in patient, how would you distinguish a physiological from a pathological chill? 10. When are mammary abscesses salutary?

Examination in Obstetrics—By A. L. Clark, M. D. 1. Define obstetrics. 2. How can you differentiate pregnancy from ovarian tumor or cyst? 3. At what period or stage of labor is the greatest danger to the mother, and what is the danger? 4. Give the contra-indications to the use of ergot. 5. Under what circumstances should version be performed? 6. Will the mother's blood pass out from the umbilical cord unless this be tied before being cut? 7. Give diagnosis and treatment of puerperal eclampsia. 8. Give diagnosis and treatment of hydrocephalus of the infant during parturition. 9. What is the shape of the posterior fontanel? 10. Give the treatment for prolapse of the funis umbilicalis.

Examination in Chemistry—By A. L. Clark, M. D. 1. What is meant by a qualitative, and what by a quantitative, analysis? 2. How would you test water for organic impurities? 3. Is hard or soft water most liable to contamination by passage through or standing in lead pipes, and why? 4. How would you test a suspected water for salts of lead in solution? 5. Give the names and symbols for ten elementary substances? 6. Name substances with which it is incompatible to unite KI in prescriptions. 7. What chemical elements are contained in pure grape sugar not found in cane sugar? 8. What liquid is the most universal solvent? 9. What is the difference between analysis and synthesis? 10. What precautions are necessary in handling chloroform in the presence of flame or fire?

ARTICLE XVI.

ST. LOUIS, Mo., April 1, 1882,
HALL OF THE ST. LOUIS MEDICAL SOCIETY.

The following resolutions were adopted by the St. Louis Medical Society, April 1, 1882:

Resolved, That the St. Louis Medical Society, while it desires to accord the broadest freedom to medical investigation, and recognizes fully the right of individuals to form and hold private opinions, hereby declares that it regards with disfavor any steps taken to lessen or obliterate the distinctions and safeguards between an honorable practice of medicine founded upon science and that founded upon any of the current delusions and exclusive medical systems of the day.

Resolved, That a copy of this resolution be forwarded by the Oorresponding Secretary to the New York State Medical Society, to the Permanent Secretary of the American Medical Association and to several specified medical journals.

WM. DICKINSON, M. D., President.

A. H. OHMANN-DUMESNIL, M. D., Recording Secretary.

ARTICLE XVII.

EDITORS MEDICAL JOURNAL AND EXAMINER: Will you kindly publish these questions in the next issue of your journal, and, if possible, call attention to them editorially? Sincerely yours,

H. H. KANE.

INSANITY FROM DRUGS.

Members of the medical profession, especially those having had dealings with the insane, are earnestly requested to answer the following questions, fully, yet concisely. The subject is one of so much importance, medico-legally and otherwise, and so very little is to be found upon it in works on insanity, that it merits the attention asked for it.

1. Have you ever seen any cases of insanity, temporary or permanent, or any deviation from the normal mental or moral state that could be traced directly to the use of a single large dose, or the continued use of *opium, or any of its preparations or alkaloids?*

2. Of what type was such insanity? Give symptoms.

3. State patient's age, sex, civil condition and occupation.

4. What was its duration and result?

5. State color of patient's hair, eyes and complexion.

6. Was there any hereditary tendency to insanity, or any history of alcholism, grave nervous disease or any drug habit in the patient's ancestors?

7. What amount of the drug was used, and for how long a time?

8. What line of treatment was pursued?

9. Please answer the same questions regarding the use of *chloral hydrate.*

10. Please answer the same questions regarding the use of *bromide of potassium*, or any other drugs.

Stamps will invariably be returned. In all cases so requested, communications will be considered strictly confidential. Reprints of the article, embodying the results of such statistics, will be sent to each correspondent. Address,

DR. H. H. KANE,
DeQuincy Home, Fort Washington, New York City.

PROFS. D. W. GRAHAM, S. H. Stevenson and M. J. Mergler, of the Woman's Medical College, have been added to the staff of Cook County Hospital. This action of the County Commissioners is to be commended in recognition of the growing usefulness of the Woman's College, as it ranks but second among the medical colleges of Chicago in the number of students sent to the County hospital clinics.

Original Translations.

ARTICLE XVIII.

DR. JULIUS KRATTER ON THE ELIMINATION OF STRYCHNIA THROUGH THE URINE. Translated from the German by F. H. GENTSCH, M.D., Chicago.

Many of the most important alkaloids, whether taken by mouth or hypodermic injection, are very radidly absorbed and taken into the circulation, and without change again expelled by the urine. With the most of them the elimination follows very rapidly, and can often be demonstrated in the urine in a very short time after being taken into the system.

This is known to a certainty of the volatile alkaloids conium and nicotine, and a list of the fixed vegetable basis. Dragendorf demonstrated by experiments upon animals, the rapid elimination of the unaltered veratrim and aconite.

That atrofine is eliminated through the urine is well-known and has been demonstrated upon the human subject as early as 1810. In three cases of poison by stramonium seeds, Allen found atropia in the urine. Cohn and Körner record the same in a case of atropia poison after analysis by Harley. According to Menot and Schmidt, the elimination by the urine is soon completed, as in the first of the above cases, after three hours, and in the latter, after ten hours, no more atrofine was found in the urine. This property of atrofine was frequently demonstrated by Dragendorff, and the same was found true of hyosciamin. So also of the much used therapeutic agent morphia, is it is well-known, that it leaves the body after a short interval of time after its ingestion, through the urine. The older investigators, such as Lassagne, Olivier and Mooge, and finally Orfila

and numerous later researches by Taylor, Bauchardat, Lefort, Kautzmann, Dragendorff, and others, confirmed the results of the older investigators. I, myself, found it in the urine eight or ten hours after death by suicide, whilst at the same time I found no trace of it in the stomach. Lewenstein made good use of these well-known facts for the detection of secret morphine eaters.

Not so unanimous, however, are the statements in regard to strychnia. That it is absorbed and is present in the blood was demonstrated as early as 1827 by Verniere. He took the blood of animals poisoned by the nux vomica bean, and poisoned others with it. The presence of strychnia in the blood and viscera was first demonstrated by Palmer in 1855. Taylor was unable to show the presence of strychnia in the corpse of Jno. Pearson's cook, the victim of Dr. Palmer. During the defense, the chemist, Herepath, testified that it was possible to detect 1-50,000 part of a grain of strychnia in the viscera. It was first clearly shown in the blood of the human subject by Oystow, later by M. Adam in the blood, muscles and urine, and by Auder seen in the liver. It seems thus to be practically demonstrated that we may accept the same law for the deportment of strychnia in the human organism in this regard as for morphine and the other alkaloids.

From the experiments of Cloötten and Dragendorff upon the lower animals, we learn:

1st. That strychnia, whether given by the stomach or subcutaneously, is rapidly absorbed.

2nd. That it finds its way into the blood unchanged, and is eliminated again unchanged. Unlike morphia, however, strychnia is not so rapidly eliminated, but slowly, and does not begin to pass off until several days after its ingestion, but is retained in the liver, so that in acute cases of poisoning by strychnia the urine is to be left out of consideration.

In all chronic cases of strychnia poison the poison is cast off from the body through the urine, but it must be remembered that the eliminating begins later and is carried on very slowly. This theory is propounded also in the various text-books on texicology. F. A. Falk, text-book on Practical Texicology Stutt-

gart, 1880, and Dragendorff on Poisons, St. Petersburg, 1876, may be recognized as understood and well authenticated, but we find in the literature records of experiments, which do not agree with it. M. Adam found in one case strychnia in the urine in nine minutes after the poison had been taken. A. O. Schulzen (Aschines, Auot and Phyiol, 1864,) and Rodgers found it in the urine in acute case of strychnia poisoning in the human subject. In one case, after seven hours chloroform inhalation, with recovery, Hamilton found it in the urine. Dragendorff, in company with Weyrich, found it in the urine after two days.

These contradictory statements in regard to the deportment of strychnia in the human organism, led me in a case of suicide by strychnia poison, in November, 1879, to give particular attention to the examination of the urine. Death followed just one hour and a half after the taking of the poison; 200 c.c. of urine of acid reaction was drawn, per catheter, from the bladder, in which I found, by analysis, in the laboratory of Prof. Schonenstein, unmistakable evidence of the presence of strychnia. In this case the poison was taken in considerable quantities in the solid form, as the undissolved strychnia was still found in the stomach on post mortem examination.

Here, then, we find a case of strychnia poison in the human subject, all the details and features of which are well-known, where, after the short period of one hour and thirty minutes the urine was found to contain the poison, a result at direct variance with the Masing-Dragendorff theory, which is based upon the results of experiments upon the lower animals alone.

DR. JULIUS KRATTER,
Docent of Hygiene, University of Gratz.

Miner Medizinische Wochensctrift, Feb. 25, 1882.

DEAFNESS IN CHILDREN.—Dr. Weill, of Stuttgart, found as a result of his examination of 4,500 school children, that thirty per cent. of them have imperfect hearing on one side, and that the defective hearing increases with age.—*Vienna Neue Freie Presse.*

Reviews and Book Notices.

ARTICLE XIX.—THE APPLIED ANATOMY OF THE NERVOUS SYSTEM; being a Study of this Portion of the Human Body from a Standpoint of its General Interest and Practical Utility, designed for use as a text-book and a work of reference, by AMBROSE L. RANNEY, A.M., M.D. With numerous illustrations. New York: D. Appleton & Co. 1881.

The author has evidently garnered the best points of other observers in this line. His research has been extensive, and his application of anatomical facts to account for clinical results is plausible. However, the field he occupies is still debatable land, and until we have a more definite knowledge of the anatomy and physiology of the brain and nervous system, such books as this must be more speculative than authoritative.

Dr. Ranney discusses in turn the anatomy of the brain, cerebrum, corpus strictum and optic thalamus, corpora quadrigermina, cerebellum and medulla oblongata. The surgical bearings of cerebral topography are given, followed by the clinical subdivisions of the brain, physiology and practical clinical deductions.

Part II discusses the cranial nerves; part III the spinal cord, part IV the spinal nerves. Parts II and III contain many suggestions of value, although the author often has unfortunately obscured his meaning by expressing his thoughts in sentences of complex and faulty construction.

The mechanical part of the book is very good, and on the whole, it is a valuable addition to the ever increasing list of medical works. J. S. R.

Selections.

INFANT FEEDING AND INFANT FOODS.

MR. VICE-PRESIDENT, LADIES AND GENTLEMEN, MEMBERS AND DELEGATES OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK: I hold in my hand a report of the committee appointed to co-operate with the New York Society for the Prevention of Cruelty to Children, "in all things pertaining to the physical and moral safety of infants and children." The report I refer to was read in last year's meeting, and has been widely distributed by the above-named society. One of the measures contemplated and advised in it was, that there should be a place or places in large cities, where the infants and young children of the poor might be supplied, at cost, with the simple though sufficient articles of food. These simple and sufficient articles of food were milk, barley, oat-meal, and, for those no longer infants proper, eggs. Their value as infant food for those who were without breast-milk, was taken for granted, and considered almost in the light of an axiom. To make it so has been one of the duties of my life. Truth, however, is frequently suspected because of its very simplicity, and often do we see complicated and roundabout means and measures resorted to in preference to plain and direct ones. Now, what I have to say may, in part, appear very common-place and trifling, because of its application to common-place things and interests. But questions are involved which it has taken, and will still take much time and labor to solve. To render the results hitherto obtained available, the normal feeding of the infants possible, and to protect them from the injuries inflicted by ill-directed love, ignorance, and the evil-devised plans and frauds of what is called commerce and industry, will be the object of the brief remarks which I shall have the honor to make

before you in regard to the dangers to which our infants are constantly exposed.

Mortality amongst infants is very great. In Europe, out of one hundred born alive, eighteen die before they reach the end of their first year. Out of one hundred who die at all ages and of all diseases, in New York City, twenty-eight are less than a year old. The causes of these deaths vary; it is a characteristic fact, however, that of all those taking place in infants under a year, from 40 to 53 per cent. are the results of diseases of the organs of digestion.

Thus, the attention of the physician called to see a sick child is mostly claimed by the alimentary canal. His care and that of the mother or attendant is therefore due to preventive measures mostly. The best preventive measure, and sometimes it proves curative, is the breast-milk of mother or wet-nurse. That is an axiom, an indisputable law of nature, as long as the circumstances of the case are favorable. In view of the great mortality in the first two months, breast-milk is the one and indispensible food for those under two months. A mother who refuses to nurse *at least that time* for other than reasons of health or life, is an accomplice in causing, perhaps even the only cause of, the death of her offspring. It is true that a baby may be taken sick with intestinal disease in spite of being nursed at the breast, for there are many causes of disease; it may, however, occur that babies are taken sick because of being at the breast. And it is those cases that both mothers and physicians ought to be well acquainted with. Sometimes it is not the breast-milk which is at fault, in the beginning, but the faulty use it is put to. Many babies suffer intensely because they are not limited to intervals of from 2 to 4 or 5 hours, as required by either age or constitution. In their cases, by too frequent feeding, both the milk of the mother and the digestion of the infant, are impaired. Here regularity is the sole indication. Sometimes, though fortunately in few cases only, there appears to exist an idiosyncrosy not explained, on the part of the baby who cannot thrive on the milk of the mother, and may do so after a change of food. In many cases, however, there are demonstrable dangers in the very breast-milk of either mother or nurse; there may be an undue percentage of

fat, or of cheese, or of salts, or of sugar, or even accidental admixtures. These may occur in the secreting organ (thus blood may be found in the milk) or be traceable to the circulating blood of the whole system; of the latter they may be the very constituents, or foreign bodies floating in it. They can be classed as either morbid dispositions or as actual admixtures. Women suffering from constitutional syphilis, chronic consumption, or anæmia, extensive rachitis, severe nervous derangement, hysterical or other, those suffering from care or hard work, and those who are compelled to take a great deal of medicine, will serve their babies best by not nursing them at all.

In regard to the influence of the medicines, the opinions have been divided. It was claimed that milk being a secretion of the gland, and not a transudation from the blood, would not contain foreign material to any great extent. That is true so far as an absolutely healthy woman and normal milk are concerned. But the first period of lactation yields colostrum, not normal milk, and very often the latter is changing into a colostral condition, such as it was soon after birth, containing different-shaped fat globules, more sugar, soluble albumen, in fact, real blood serum. This may take place in every case of impaired health. And the more serum of blood is contained in any milk, the easier is the admixture of soluble substances circulating in the blood. Such substances are ethereal oils, coloring matter, iron, iodide of potassium, arsenic, zinc, mercury, salines, bismuth, lead, antimony, nitrate of potassa, magnesia, all of which have been frequently found in the milk, and frequently missed. They will be missed the more frequently the healthier the woman and its mammary secretion. But, as I formulated the subject some years ago, milk secreted from an insufficient mamma, by a woman not in full health and vigor, by an old woman, by a very young woman, by an anæmic woman, by a convalescent woman, who has consumed a large portion of her albumen, be it circulating or tissue albumen, by a neurotic woman with frequent disturbances of the circulation—milk, in fact, which is not the normal transformation of the elements of the mammary glands, but consists of more or less transuded serum, is apt to be impregnated with elements circulating in the blood. The indications on the one hand for permis-

sion to nurse, on the other, for the administration of medicines to a nursing woman, require, therefore, a greater strictness than is usually conceded. At all events, the good results obtained in many cases of ailment on the part of the infant, by artificial feeding, in preference to nursing, are better than accidental.

Those infants who are thus deprived of breast-milk, or never had it, or have an insufficient supply of it, require artificial feeding. The material resorted to ought to be as much like mother's milk as possible; and naturally, when human milk cannot be had, animal milks are selected. Amongst them, only two are available to any extent, that of the goat and of the cow. If there be any objection to either, it is principally valid in regard to the former. For the chemical incongruities and other difficulties, to which I shall briefly allude in regard to cow's milk, are even more pronounced in the case of goat's milk.

My remarks of this evening I expect to be of a practical nature throughout, and brief. Thus I shall not try to go into chemical or physiological questions beyond the time allotted or the opportunity afforded. Therefore, I shall allude to but two points which it is interesting to appreciate, in order to understand why it is that cow's milk, as a sufficient substitute for mother's milk, must necessarily be a failure.

Human milk and cow's milk differ mainly in that the percentages, and probably also the properties, of fat and of caseine contained in them, differ widely. The percentage of fat in cow's milk is larger than in human milk, and, on close observation, we shall learn that woman's milk contains as much fat as the young digestive organ can tolerate. From what we know of the diastatic power of the infant pancreatic gland, we must conclude that its property of digesting fat is but slimly developed soon after birth; and daily observation proves that such is the ease. When you examine chemically the normal alvine digestions of the infant, well mixed, uniform, and yellow, you will discover not only fat acids, but free fat to the extent of about 12 per cent. Some more fat leaves the intestines in a saponified condition. Many of the passages which have been believed to contain caseine in excess, because of their white color, were found to contain large quantities of fat. And all this happens when the normal infant

is fed exclusively on normal breast-milk. Now if much fat is not required nor absorbed under normal circumstances, if fat acids form so easily when the digestion is apparently normal, with the constant tendency of deranging digestion; if we know, as we do, that even normal breast-milk contains more fat than the infant has any use for, we must admit that in artificial feeding, with cow's milk or other material, we are in greater danger from giving too much fat than too little. Good milk has been called that which contains most fat, say from four to five per cent. The more cow's milk deserves the title of being good—that is, fat—the greater is the danger arising from giving it to infants without considerable modification. This result authors appear to gradually appreciate. When Forster fed a baby of four months with cow's milk and rice decoction in the proportion of 1 to 4, all the albuminous substances and sugar of this mixture had disappeared when the fæces came to be examined. Thus they were entirely digested, but of the ashes 34, and of the fat 30 to 40 per cent. were found unchanged. This experiment proves, in the opinion of Prof. Bollinger, whom I rejoice in quoting, that a milk less rich in fat is more adapted to serve as infant food than one with a large percentage of fat; and further, that cows whose milk is destined to be used as infant food, ought to be fed so as to reduce rather than increase the amount of fat contained in it. A good authority, Prof. Feser, makes the distinct statement that the milk he examined on the Alps of Switzerland, and which he prefers greatly as children's food, contained less fat than that from the cows in the neighborhood of a large city. If that be so, and it is so, I recommend as a matter of practice that the morning milk, with its lesser percentage of fat (butter), should be given in preference to evening milk, if any at all.

Now, if the excess of fat be one of the causes why cow's milk should not be employed as infant food, why not remove it or diminish its percentage? Easily said, not easily done; for when milk is allowed to stand, and the cream to rise, the milk at the same time changes its reaction. Instead of being alkaline or neutral, it becomes acid, and acid milk is a danger which an infant must be protected from. Some years ago, Lefeldt and Delaval invented each an apparatus which, by rapid centrifugal motion,

separates the cream from the milk very thoroughly. Such an apparatus may, perhaps, be found useful in reducing the normal fat of cow's milk to an acceptable standard in the future. For the present, however, I know of no proceeding which accomplishes the end in view; and, while submitting to the unavoidable, I must protest against the avoidable occurrence which is reported to have taken place in a court of justice but lately. In one of the skim-milk police cases—and unfortunately there are less "cases" than adulterations—the expert for the defense, a well-known chemist, tried to clear his client by proving him a public benefactor, inasmuch as Dr. Jacobi objected to an excess of butter in the milk used for children.

Caseine is represented in cow's milk in a larger percentage than in human milk. To reduce its relative quantity, compared with the rest of the solid constituents, is possible by the increase of these only. There is no method by which its absolute quantity in a given amount of milk could be diminished, except such as would render the remaining part of the milk unfit for use. This diminution, moreover, would have to be a very thorough one, for a mixture containing more than 1 per cent. of caseine has been found to be indigestible by Hammarsten, and by Biedert. But these are not the only objections to cow's milk caseine. Not only is its percentage in the milk too great, its chemical and physical properties differ greatly from that contained in human milk. Mineral, acetic, and tartaric acids, epsom salts, phosphate of lime, form a dense and hard cogulation with the caseine of cow's milk, while human milk congulates in loose and small flakes only, under the same circumstances. Cow's milk, when introduced into the infant stomach, forms hard curds; if the organ be strong, or the infant liable to vomit easily, as most of them are, thick massive pieces of cheese are thrown up, and relief will follow. If no vomiting occur, these hard masses are propelled into the intestinal tract, where sometimes they give rise to obstruction. Sometimes, however, they irritate the canal to such an extent, that diarrhœa is the result. In both cases lumpy cheese is the main constituent of the evacuations. In every case of infant diarrhœa, the examination of the passages might be made; in many cases the appearances will be found as described, and no

case of the kind will terminate favorably unless the food be changed. To say that these cases will occur, would not do justice to the facts. They are very frequent, I have seen hundreds; but lately a child of sixteen months of age, and of six pounds in weight, was presented to me with the same symptoms, and with the additional remark, not only that everything had been done by the medical adviser to stop the exhausting diarrhœa, but also, that a cow had been purchased for the sole purpose of furnishing pure milk for the suffering baby. That suffering baby was instantly improved when the pure milk was stopped, and more suitable food was substituted.

The objections to cow's milk, as the exclusive diet of infants, in place of mother's milk, which cannot be had, are dependent on its very chemical composition and physical properties. These cannot be changed by the most studious and successful attempts at procuring the most uniform and pure article possible. That, however, does not prove that a bad or indifferent milk is as good and useful as the very best milk from the very best cows. The inference is rather this: that the employment of inferior milk is criminal when good milk can be had through precaution, care and industry. To have accomplished that purpose is the pride of several European cities. In some it was through medical societies that the idea was started and put into effect, to procure as good milk as cows of good stock, well fed under favorable sanitary conditions, could furnish. Stuttgart had the first establishment of the kind; that in Frankfort-on-the-Main commenced its operations in 1877, with thirty cows, and increased that number to eighty-one in 1881. The amount of milk produced and delivered to consumers in 1881 was 313,563 litres (quarts), more than ten quarts per cow daily. The establishment is private property, but to earn the support of the public, and to secure the desired coöperation of the physicians of the town, the proprietor bound himself not to engage in any other business, and solicited the control and advice of a committee, consisting of three delegates of the medical society, one veterinary surgeon and one chemist. Great pains are taken in the purchase of animals of a good stock, all of them thus far being imported from Switzerland. Before they are admitted they are examined by the vet-

erinary surgeon, who superintends the institution, and keeps a regular record of those who may fall sick. Two months before calving the milk is not sold at all. The age of the cows of from three to eight years is considered the only available one. The stables are well ventilated, and washed, drained and connected with the system of city sewers. The floors of the stalls, the ceilings and the lower part of the walls are cemented. The skin of the animal is looked after with great care. The stables are so near the city limits that the milk cannot suffer by transportation. It is tightly corked in half-quart and quart bottles (this process being cautiously watched), and speedily delivered. Printed directions for its further treatment accompany the article. Besides, stress is laid on avoiding a prejudice on the part of the public, to which I have raised objection long ago, with but very partial success, viz.; not to select the milk of a special cow for the special use of the same individual, but to mix and equally distribute the milk of the whole dairy.

A great innovation for practical purposes, based on good experiments and long experience, is that no change of food takes place, and poisonous, purgative or otherwise injurious admixtures to the food of the animals are avoided. Dry food only is given, viz., 15 kilog. (30 pounds) of hay, 6½ kilog. (13 pounds) of meal and bran, 6 grammes (1½ drachms) of salt, and spring water to drink.*

Human knowledge and foresight have almost exhausted themselves in these praiseworthy efforts. But the result of them all is good cow's milk, and no equivalent for mother's milk. But do I mean to say that cow's milk, given pure, or cow's milk mixed with water, is absolutely injurious, poisonous, to babies? Far from it. The undeniable fact that there are infants who thrive on that exclusive diet, or whose general condition of health remains such that no medical or medicinal interference in their behalf appears called for, would give the lie to such an exaggerated opinion. Still, there are a great many infants who appear to thrive better than they actually do. Many grow fat and

* Dr. V. Cuyrim, in "Frankfort-on-the-Main, Its Hygienic Conditions and Institutions." Ed. by Dr. A. Spiess, 1881.

rotund on improper food, no immediate harm makes its appearance, and still you see many such as increase in weight, even more than the average infant, and still lay the gradual foundation to future ailing. For such fatness and rotundity means, too frequently, rachitis, and requires watching and change of food. Still, the number of infants remaining in good condition on that food is not very small. What does it prove? Nothing else but that the digestive processes permit of a certain latitude, that nature does not do routine work, and that the sum total of vital processes do not respond to certain occurrences, or influences, like reagents in a chemical test, where the same process always yields the same results. There is no food on which certain infants will not thrive. But when, in a larger percentage of cases, the same unfortunate results are exhibited, and when these can be traced to their exact and uniform cause, that particular food is to be condemned. The assertion of many that cow's milk is an exact substitute for human milk, is the counterpart of that which claimed equality for animal and human blood. The practice, based upon this assumption, resulting, as it did, in the transfusion of animal blood into the human circulation, outlived itself very speedily.

Cow's milk, as a universal substitute for mother's milk, has lost its credit with many through the differences in the article; which, however, as long as no adulterations are perpetrated, are less marked than the same secretion of the human being. If that were not so, how does it happen that all over the civilized world substitutes are sought for, offered and purchased, though milk be as cheap and handy as anything else? Why is it that to avoid cow's milk untold risks are run in procuring more expensive, more unknown and more unreliable vegetable compositions, which seldom keep the promises loudly displayed on the labels? What are the promises? What does it mean when they claim to take the place of mother's milk?

Mother's milk is considered the best prepared article of food known, though, as you have been told before, it may be—it could have been improved upon. Perhaps it is the best, though; at least there was a time when we were all of that opinion; for perhaps the surplus fat, which passes off undigested, may serve

some purpose hitherto unknown. An ideal article of food must serve two purposes and consist of two classes of constituents. It must, in the infant, supply the growing tissue with material sufficient to take the place of that which is constantly wasted, and to allow a surplus for increase; and, secondly, supply fuel for the purpose of keeping up the production of an equable temperatu.e and the functions of the organs, mainly those of respiration. The first requirement is fulfilled by the proteinous, or albuminous, substances, the other by carbo-hydrates. This statement would require modification, if it were the object to be absolutely correct, for the two classes will supply each other, act vicariously for each other, even change into each other, under certain circumstances, in the complex machinery of the human system. The albuminous tissue-builder in the milk is mainly caseine, sometimes, also, albumen; the second class is principally represented by fat and sugar. In vegetables the first class is represented in the gluten, the second mainly in the starch. If you add that in the milk, the ideal food, the proportion of the first class to the second is about 1 to 4, the vegetable substitutes are to be judged, in regard to their mere chemical composition, to that formula of about 1 to 4.

But it is not the chemical formula alone which determines the rank of a substance as a nutriment. To the equivalents of the chemical formula of cow caseine infant mathematics would not object, did not the infant stomach revolt against it. Thus it is not exclusively the chemistry of an article, but its digestibility, which comes into question. Now, not everything is equally digestible for everybody, sick or well, old or young, adult or child, child or infant, infant or newly born. And particularly is that so with regard to starch, which forms such an overwhelming part in the composition of vegetables, and particularly of those which are mainly used for the purpose of the manufacture of infants' food.

Starch is changed into sugar and rendered digestible by the secretion of two sets of glands, the salivary glands and the pancreas. The latter does not does not possess that function before the end of the first month of life. The former begins to perform the same function, to a certain degree, immediately after birth.

The experiment has been made by Schiffer, Korowin and many others. Starch, inclosed in a small bag, is introduced into the mouth of the infant. After a certain time the starch is found to be transformed into sugar. To collect fifteen grains of saliva in a baby of two or three weeks took from fifteen to thirty minutes; in a baby of two months, one or two minutes. Thus two facts result from these experimental observations: 1. That starch is digestible at any age. 2. That the transformable and digestible amount of starch is but very small in the first few weeks of an infant, and increases gradually. About the eleventh month the digestive property of the saliva is equal to that of an adult, when the quantities are equal.

The inferences to be drawn are: 1. That farinaceous foods may contain starch, but starch must not be the main part of the food. 2. That when they contain a great deal of starch it is best to change it, by a thorough baking process, into dextrine, which is changeable into sugar, and is easily absorbed and utilized. 3. That those farinacea ought to be selected for infant food in which the proportion of gluten to starch favors the former.

There is another consideration of vast importance, which, when the infant foods now in the markets were first manufactured, could not be known. Starch is not the same article everywhere. In different substances it requires different times to be transformed into sugar. Potato starch requires 2 to 4 hours, that of peas 1¾ to 2 hours, wheat ½ to 1 hour, barley 10 to 15 minutes, oats 5 to 7 minutes, rye 3 to 6 minutes, maize 2 to 3 minutes.

Guided by these facts, I invite you to scan with me a number of farinaceous substitutes—their claims, promises and powers. You will notice, there is not one of the men or companies who supply them but is loud in the praise of his gift to infancy; not one but ranks in his actual or alleged estimation as the arch-benefactor of mankind.

Justus von Liebig's (the great chemist) substitute consisted of the flour of wheat and barley malt, bicarbonate of potassium, water and milk in certain proportions. For about twenty years this preparation has been the subject of eulogies and reproaches, until in its original form it has been nearly given up; for its home preparation is not so easy as its inventor claimed.

It requires too much care and attention from a person of intellectual undersize. Besides, everything containing sugar is liable to decompose in summer by fermentation and moulding; all preparations really dry have a bad taste. Moreover, the phosphate of lime, which, it is true, is found in sufficient quantity in both wheat and malt, does not get into the solution, and finally, for its preparation you always require milk—milk in winter and summer, milk in city and country, with all its actual or alleged dangers. Still more, it has, though prepared ever so carefully, proven unsuccessful in too many cases. Diarrhœa has often resulted from its use. Numerous attempts have been made to put it up for the market in such a shape that little time and no intellect might be required for its final use. Loefflund's article has the merit of being no fraud, as far as I know; that of Liebe I paid attention to when it was first largely advertised for sale. A dozen bottles contained in a box were examined; their consistency and composition differed considerably. Another preparation, alleged to be compounded according to the prescription of the great chemist, is sold with the name of his son, Herman von Liebig, attached to the recommendation of the label. He has a great deal too much to say in its praise. "1. This remarkable preparation accomplishes everything that can be expected of a substitute. 2. Although the flour is a perfect nutriment in itself, I still recommend on my labels its mixture with cow's milk. 3. Where good cow's milk cannot be had, condensed milk may take its place. 4. Infants fed on cow's or condensed milk ought to have it mixed with my flour." You see the unsophisticated public must come to the conclusion that the object and destination of this food is no other but to be purchased.

Next in order is Nestle, as widely known as Plantation Bitters and cider vinegar. This food consists of milk, wheat flour (alleged to be baked, for the purpose of crushing the cellulose and cell membranes), sugar and salts. As a chemical critic says (H. Mueller, in *Pharm. Centralhalle*, xvi., 1875, n. 34), he publishes no analysis, but advertisements only; and he knew how to advertise. I remember well when the people of New York awoke one morning to find their libraries increased by a big pamphlet

containing the new revelation. It was written by no less a person than an emeritus university professor of pathology, in his time a justly celebrated man, Lebert, who passed his very old age in the neighborhood of where Nestle had established his health, life and money-breeding factory. Every such pamphlet commences with a declaration of principles. This begins by telling the reader that cow's milk is more "nourishing" than human milk; that, however, the addition of water does not make it any more similar to the latter; and that the nursling ought to have cow's milk at once alongside that of his mother—probably to improve upon nature's plan. Then why does he want or recommend substitutes, if cow's milk does so well—even better than well? For the simple reason that if people would feed their own cow's milk they would not purchase Nestle's; and in order to induce them to do the latter he tells you that your cows may be tubercular, may be fed improperly, their milk may be adulterated with water, or may contain disease germs. Nestle's cows are not tubercular, we are to infer, are not fed improperly, their milk cannot be adulterated, nor does it contain disease germs—indeed not. For it is the milk of *Swiss cows*, with such a halo round their horns that even that public-spirited institution called St. John's Guild, of New York, publishes an advertisement of Anglo-Swiss food on the last page of its pronunciamento on the bringing up and feeding of little children, which is distributed gratuitously, or for an annual contribution of three dollars.

[TO BE CONCLUDED IN JUNE NUMBER.]

A LECTURE ON THE HISTORY OF DISCOVERIES CONCERNING THE CIRCULATION OF THE BLOOD. Introductory to the Course of Physiology. Delivered in the University of Edinburgh, October 28, 1881, by WM. RUTHMRFORD, M.D., F.R.S., Professor of Physiology.

GENTLEMEN:—It has for some years past unfortunately become customary on the part of certain opponents of medical progress, to systematically represent that nothing of any value has been

learned by experiments on animals. These persons have been "heard because of their much speaking." By the frequent repetition of statements calculated to produce an erroneous impression upon those who have not been educated in biological science, they have succeeded in persuading many intelligent persons to believe their false report. It seems to me perfectly plain that we must not any longer merely trust the common sense of the public to perceive that they are being systematically misled by the enemies of science. We must trouble ourselves more than we have hitherto done to provide the public with a true account of the manner in which important physiological discoveries have been arrived at; and, as "truth is great and will ever prevail," I am sure that, if we put our case clearly, it will not fail to convince minds that are unprejudiced. I cannot in the course of an hour do more than allude to a limited part of physiology, and I have chosen the circulation of the blood, because that is a typical case, from which the others may be judged.

It was long a prevalent idea among the ancients that the blood of the body is contained in the veins and right side of the heart, while the left side of the heart and arteries are filled with air derived from the lungs and distributed to all parts of the body to keep it cool. So completely did this idea—of blood in the veins only—occupy the minds of classic writers, that even now, were any one on some rhetorical occasion to say, *e.g.*, that Mr. Gladstone has Scottish blood in his *arteries*, he would be regarded as an iconoclast of classical phraseology. That old erroneous idea resulted from lack of knowledge regarding the many differences that exist between a dead and a living body. It is true that the blood, to a large extent, leaves the arteries at death, and accumulates in the veins, and that when both sets of vessels are cut across after death, the thin-walled vein collapses, while the thick-walled artery remains patent and becomes filled with air by the elasticity of its wall. But it is equally true that until the artery is opened, there is no air in it, either during life or after death.

In the time of Galen it came to be recognized that the arteries contained blood, but it took many a long century after him to discover that the arteries contain blood without an admixture of air. Galen was a Roman of the second century. He was the

physician and friend of the great Emperor Marcus Aurelius. He was a man of much force of character, and an indefatigable investigator. His book on the "Uses of the Parts of the Body" is of great historical interest to the physiologist. It shows that Galen was always in his researches actuated by the conviction that "nature does nothing in vain," and that every part of the body must have some utility. He dissected the dead, he experimented on living animals, and he watched the effects of diseased conditions which have, aptly enough, been designated the "experiments of nature." By observations made by these three methods, he criticized the ideas of his predecessors, and advanced many new doctrines, some near the mark, many wide of it. It is not surprising that many of his theories should have turned out erroneous, for with a mechanism like the animal body, so complicated and difficult of comprehension, how could he, in the infancy of science, do otherwise than err greatly on many points which chemistry and other developments of modern science were needed to explain?

Galen's teaching with regard to the movement of the blood deserves our attention, for it lasted from the second until the seventeenth century, when it received its final blow from Harvey. Galen said, since the different parts of the animal body require to be nourished, nature has provided the alimentary canal, a large channel common to all the nourishing materials, and a system of smaller channels—the vessels which convey the nutriment to all parts of the body. In the stomach the food undergoes a primary elaboration, and the material suitable for nourishment passes into the veins of the stomach and intestines, and thence by the vena porta to the liver, where it undergoes a second purification, the useless material being thrown away as the bile, and the remainder becoming "perfect blood." He compared the "liquid humor" found in the portal vein to the juice just expressed from the grape —which must undergo fermentation and refinement before it becomes real wine. To Galen, therefore, the liver was a blood-making organ; it was the "fountain of the blood," which flowed away by the hepatic veins to the vena cava, to be conveyed to all parts of the body (*lib. cit.*, bk. i., ch. v). According to Galen, the blood flows up the vena cava to the head, neck, and arms,

and down that vessel to the lower parts of the body; and everywhere the tissues are nourished by blood brought to them by the veins. He regarded the right auricle of the heart as a sort of diverticulum from the vena cava, through which some of the blood passes from the vena cava into the right ventricle. From the right ventricle it takes two courses ; part of it passes through the pulmonary artery to nourish the lungs, while the remainder passes through pores in the septum of the heart into the left ventricle. There it is mingled with air drawn from the lungs through the pulmonary veins, and the mixture of blood and air leaves the heart by the aorta, to be distributed by the arteries to all the organs. So, said he, every organ is supplied with a vein, an artery, and a nerve; the blood in the vein nourishes it, the artery supplies it with vital spirits and keeps it cool, and the nerve gives it sensibility. Galen evidently thought that by getting the blood from the right to the left side of the heart through its partition wall, he had triumphantly explained how it is that in the living animal there is blood in the left as well as in the right ventricle of the heart, and yet he was still in harmony with the doctrine of his teachers, that air passes from the lungs to the heart and arteries through the pulmonary veins.

But he started another unfortunate error, which was even in the seventeenth century, supported by Riolan, of Paris, in opposition to Harvey. Galen stated that everywhere throughout the body the arteries and veins frequently anastomose by small openings, whereby an interchange of blood and air takes place (*lib. cit.* bk. vi. ch. x.) With that idea we must return for a moment to the lung. Galen made the discovery that the pulmonary veins are not merely air-tubes, as previously supposed, but that they contain blood as well as air, and he accounted for the presence of the blood by supposing that it escapes from the pulmonary artery through his imaginary anastomoses between it and the pulmonary vein. He said that the blood is squeezed through these minute openings by the contraction of the chest, "since the sigmoid valves at the orifice of the pulmonary artery prevent its reflux to the heart, where can it go when urged by the fall of the chest-wall, but through the small side apertures between the pulmonary arteries and pulmonary veins?" Apparently Galen did not

attach much importance to the blood in the pulmonary veins. It seems as if he thought it got into the veins by a sort of *side issue*. The imaginary pores in the septum of the heart appear to have been to him the great channels by which the blood reaches the left ventricle. Still, it must be admitted that Galen very nearly discovered the pulmonary circulation. His teaching with regard to the heart and pulse is also of interest, for it encumbered physiology until Harvey showed its error. Hippocrates, and Galen five centuries later, compared the heart's action to that of the chest. As the chest moves up and down, inspiring and expelling air like a pair of bellows, in like manner the heart, with its valves, acts like bellows, forcibly drawing blood into its right, and air into its left side, and then expelling both by the arteries. This indrawing of the blood and air, like the act of inspiration, was thought to be the more forcible of the two movements. Galen also regarded the pulsatile movements of arteries as a bellows movement, the artery drawing in blood and air when it expands, and expelling them when it contracts, and he thought that the expansion of the arteries is synchronous with the dilatation of the heart—a great error.

Now, that is the doctrine regarding the motion of the blood which continued to hamper the progress of medicine for many centuries, and undoubtedly the reason why Galen, with all his ingenuity, failed to correct so many errors, was that he was not sufficiently impressed with the necessity for bringing all theories to the touchstone of exact observation and thoughtfully planned experiment.

The next discoverer was Michael Servetus, the Spaniard, whose tragic death at the stake—because of his religious opinions—ended untimely a life that might have rendered much service to science. In a work on "The Restoration of Christianity," published in 1553,* Servetus states that comparatively little blood permeates the septum of the heart; most of it passes through the pulmonary artery to the lungs, where it becomes of a crimson color, and returns to the heart by the pulmonary veins, which carry air as well as blood. Some years later, Columbo, professor

* See the valuable work, "Servetus and Calvin," by R. Willis, M.D., London, 1877.

of anatomy at Padua, and Cesalpinus, of Pisa, also described the passage of the blood through the lungs.

We come now to the discoveries of Harvey.

William Harvey, a native of Folkestone, lived at a time which will be forever memorable in the history of England. It was the time of Shakspeare and Milton, of Dryden and Ben Jonson, of Bacon and Robert Boyle, and it is not too much to say that Shakspeare did not do more for English literature than did Harvey for English medicine. Harvey was well educated. He took the degree of Bachelor of Arts at the University of Cambridge, and as the medical schools of Italy were then more celebrated than those of England, he went to Padua, and there studied medicine for five years. He returned to England, took the medical degree of Cambridge, and settled in London. He was appointed physician to James I., and afterward to Charles I., who took a deep interest in his experiments, and gave him for the purpose of vivisection many animals from the royal parks. In 1615 Harvey was chosen to give lectures on anatomy at the London College of Physicians, and in his first course in the subsequent year he gave for the first time a public account of the results of an elaborate research "On the Motion of the Heart and Blood," which had culminated in his doctrine of the circulation. Harvey was then in his thirty-eighth year. He had been in no haste to catch the notice of the public by publishing fragments of his research, but he wisely waited until he had accumulated observations and arguments sufficient to establish his doctrine of the circulation upon a foundation that could not be shaken. You can at any time peruse the excellent translation of Harvey's works by Dr. Willis, and from them, together with the account of Harvey's life by the translator, learn how Harvey arrived at his results. He had at Padua been instructed in the doctrines of Galen. He had learned Columbo's account of the manner in which the blood passes from the right to the left side of the heart through the lungs; he had also learned the anatomy of the valves of the veins. These valves were discovered in 1754—whether by Fabricius or Sylvius is disputed—but, at any rate, they were discovered at least four years before Harvey was born. He tells us, however, that their function had been entirely

misapprehended by all who had preceded him. It never occurred to them that in those veins which have valves the blood can flow only one way, and that toward the heart—the very opposite of what Galen had supposed. To that point, however, we will presently return. At the outset of his great work "On the Motion of the Heart and Blood in Animals," Harvey refers to the opinions of Galen and Columbo, and then says: "It is plain that what has heretofore been said concerning the motion and function of the heart and arteries must appear obscure, or inconsistent, or even impossible, to him who carefully considers the entire subject; it will be proper to look more narrowly into the matter; to contemplate the motion of the heart and arteries, not only in man, but in all animals that have hearts; and further, by frequent appeals to vivisection, to investigate and endeavor to find the truth."

His first concern was with the heart and arteries. He tells us that he sought by "vivisection," and not by a 'study of the writings of others, to discover the motions and uses of the heart;" that he was at first greatly perplexed when he looked at the moving heart; but that by "daily diligence in vivisection" on a "variety of animals," he "thought he had obtained the truth." He describes what he saw when the chest of a living animal and the pericardium are laid open: "There is a time when the heart moves, and a time when it is motionless." The events are "more obvious in the colder animals, such as toads, frogs, serpents, fish, crabs, shrimps, snails, and shell-fish. They also become more distinct in warm-blooded animals, such as the dog, if they be attentively noted, when the heart begins to flag, to move more slowly, and as it were, to die; the movements then become slower, and the pauses longer, so that it is more easy to unravel what the motions really are, and how they are performed. In the pause, as in death, the heart is soft, flaccid, exhausted, lying as it were at rest" (Harvey, *lib. cit.*, p. 21). "After the pause the auricles contract and throw the blood into the ventricles, which being filled, then contract, and drive the blood into the arteries. The two motions—one of the auricles, the other of the ventricles—take place consecutively, but in such manner that there is a kind of harmony or rhythm between them" (*lib. cit.*,

p. 31). Harvey, therefore, was the first to give an accurate description of the cardiac movements, and to show that the great motion of the heart is not its dilatation, but its contraction, and that the heart is not a pair of bellows like the chest, as Galen had thought.

Harvey was also the first to give a correct explanation of the pulse. He proved by experiment that the pulse in the arteries is not synchronous with, but succeeds, the impulse of the heart, and that the pulse is due to an expansion of the vessels by blood projected into them from the heart, and not to any inherent power of expanding like a pair of bellows. He divided an artery, and observed that blood flowed from its cardiac end with greatest force when the artery expands, and not when it contracts. A bellows-like action of the artery would have produced precisely the opposite effect (*lib. cit.*, pp. 134, 135). He performed other experiments on exposed arteries, and completely proved that it is the force of the heart's contraction which produces the pulse, by propelling at intervals a mass of blood into a system of vessels capable of passive expansion. Need I say how great a step was made in the progress of medicine when Harvey experimentally demonstrated the true cause of the pulse?

Harvey also experimentally demolished the old idea that air passes from the lungs into the pulmonary veins, to be mingled with blood in the heart and distributed through the arteries to the body generally. There is something like grim humor in his repeating one of Galen's experiments to confute Galen himself on this point. Harvey says (*lib. cit.*, p. 16): "If any one will perform Galen's experiment of dividing the trachea of a living dog, forcibly distending the lungs, and then tying the trachea securely, he will find when he has laid open the thorax abundance of air in the lungs, even to their extreme investing tunic, but none in either the pulmonary veins or left ventricle of the heart. But did the heart either attract air from the lungs, or did the lungs transmit any air to the heart in the living dog, by so much the more ought this to be the case in the experiment just referred to." Every surgeon knows well the importance of this discovery. In many of his operations he carefully guards against the entrance of air into blood-vessels, for he knows that death would inevitably

follow the entrance of even a relatively small quantity of air into the veins.

Harvey also upset the doctrine that the blood passes from the right to the left ventricle through pores in the septum of the heart. He says "no such pores can be demonstrated" (*lib. cit.*, p. 17), and "why have recourse to invisible porosities * * * when there is so open a way" from the right to the left side of the heart through the pulmonary artery and pulmonary veins. But he also adduces experiments. He says (*lib. cit.*, p. 135) that if you tie the pulmonary veins in a living animal, and so prevent the blood from entering the left side of the heart, death ensues; and he gives you to understand that the results are similar to those in death from asphyxia—the right side of the heart becoming engorged, the left comparatively empty; and then he concludes that "as all these particulars have been recognized by the senses, it is manifest that the blood passes through the lungs, and not through the septum," in its course from the right to the left side of the heart, and that the right ventricle is intended to drive the blood through the blood-vessels of the lungs, and through them alone.

There was another great fact overlooked by all the predecessors of Harvey which was of fundamental importance in leading him to the idea that the blood moves in a circle. He evidently asked himself the question, How much blood does the heart transmit from the vena cava to the arteries in a given time? He found that in the dead body the left ventricle holds upwards of two ounces of blood. Then he says (*lib. cit.* p. 48), let us assume how much less the heart will hold when contracted than it does when dilated, and how much blood it projects into the aorta at each contraction. "Let us suppose that, as approaching the truth, the fourth or fifth, or sixth, or even but the eighth part of its charge, is thrown into the artery at each contraction. This would give either half an ounce, or three drachms, or one drachm, of blood as propelled by the hear at each pulse into the aorta, which quantity, by reason of the valves at the root of that vessel, can by no means return into the ventricle. Now, in the course of half an hour, the heart will have made more than one thousand beats—in some as many as two, three, and even four thousand.

Multiplying the number of drachms propelled by the number of pulses, we shall have either one thousand half-ounces or one thousand times three drachms, or a like proportional quantity of blood, according to the amount which we assume as propelled with each stroke of the heart, sent from this organ into the artery a larger quantity in every case than is contained in the whole body! * * * But let it be said that this does not take place in half an hour, but in an hour, or even in a day; any way, it is still manifest that more blood passes through the heart" (in that time) "than can either be supplied by the whole of the food consumed, or than can be contained in the veins at the same moment. * * * In short, it could be furnished in no other way than by making a circuit and returning." And then he says: "This truth indeed presents itself obviously before us when we consider what happens in the dissection of a living animal. The great artery need not be divided, but only a small branch, to get the whole blood in the body, that of the veins as well as that of the arteries, drained away in the course of half an hour or so" (*lib. cit.*, p. 50). Observe how he proved by that experiment that all the blood of the veins flows through the heart into the arteries, and can escape by an opening made into one of them, even one of small size. These are the facts that led Harvey to believe that the blood moves in a circle, and it is to be observed that he nowhere mentions the valves of the veins as in any way assisting him toward his great conception.

With regard to the flow of blood in the veins, Harvey demonstrated that the blood flows only toward the heart. He opened the jugular vein in a living animal, and found that it ceased to bleed when its cranial end was squeezed, but continued to bleed although its cardiac end was compressed, proving that the blood flows in the vein toward the chest, and not from it, as Galen supposed. He experimented on the flow in the veins of the human forearm. He tied a fillet round the upper arm, and showed that the veins on the cardiac side of it become empty, while those on the distal side become engorged; proving that the blood was prevented by the fillet from flowing through the veins toward the heart. He observed in the bandaged arm the bead-like swellings of the distended veins that mark the situations of the valves.

He applied two fingers to a vein: with one he pressed the vein to prevent the entrance of more blood from below, while with the other he squeezed the blood out of the vein upward past a valve, and observed that the blood could not return to the emptied segment because of the valve. In that way he demonstrated the function of the venous valves.

If Harvey had only had a microscope able to reveal the capillaries in the web of a frog, in the wing of a bat, or in the tail of a fish, he could readilly have demonstrated the actual fact that the blood does flow from the arteries to the veins. But it was reserved for Malpighi to furnish that final link in the chain of actual demonstration. Harvey had to fight his battle in ignorance of the capillaries. He could only say, "The blood must pass from the arteries to the veins and return to the heart, but I cannot exactly say through what channels the passage is effected; the blood appears to pass through the pores of the tissues."

There was much commotion when Harvey proclaimed his doctrine. Many blamed him for his temerity in daring to call in question the doctrines of the ancients; many denied the truth of what he said. But he was indefatigable in demonstrating his experiments, and in devising new ones to carry his case, and he lived to see his doctrine at length accepted by nearly all. But observe how history repeats itself. Harvey, in one of his letters (*lib cit.*, p 109) says: "There are some who say that I have shown a vainglorious love of vivisection, and who scoff at the introduction of frogs and serpents, flies, and other lower animals upon the scene, as a piece of puerile levity, and they do not hesitate to use opprobrious epithets. But to return evil-speaking with evil-speaking I hold to be unworthy in a philosopher and searcher of the truth. I believe I shall do better and more advisedly if I meet so many indications of ill-breeding with the light of faithful and conclusive observation. Detractors, mummers, and writers filled with abuse, I resolved never to read them, satisfied that nothing solid or excellent, nothing but disagreeable terms, was to be expected from them, so have I held them still less worthy of an answer. Let them consume on their own ill-nature; let them go on until they are weary, if not ashamed.'

These are the words of Harvey. His detractors did at length grow weary. Even in these days of detraction he—the greatest vivisector this country has ever known—is treated with respect, and a monument is raised to his memory in his native town. How often it has happened in the history of science, that those who cannot comprehend the aims and methods of the searcher after scientific truth have been all too ready to cast a stone. So it was with one so great as Harvey. His humble followers need not wonder if they fare no better.

The work of Harvey was worthily followed up by the Reverend Stephen Hales, rector of Faringdon, in Hampshire, and minister of Teddington-on-Thames. To him we owe the first measurement of the pressure of the blood in arteries and veins. This knowledge was entirely arrived at by experiments on living animals. In his valuable "Statical Essays" (London, 1740), ordered to be printed by the Royal Society of London, he gives the details of experiments on animals, in which he introduced a long, upright glass tube into one of the larger vessels, and observed the height of the column of blood which the pressure could support. He made many experiments on different animals; he observed the effects of various conditions on the blood-pressure, and so tapped a spring of knowledge that still flows with new discoveries. In physiology and pathology there is scarcely any subject which requires to be more frequently taken into account than the blood-pressure. It is, like the pulse, a household word to the physiologist.

I fancy the Rev. Stephen Hales would have been greatly gratified, could he have seen all that was to flow from his experiments, and I rather wonder what he would have said had he lived until now, and been asked to conduct an anti-vivisection prayer meeting.* I am sure he would have felt no little sadness at the strange short-sightedness of some of his fellow-Christians.

From Harvey and Hales let us pass to Hunter. John Hunter was a Scotchman of whom we have reason to be proud. We have, indeed, raised no monument to his memory, but he needs none. The great Museum of the Royal College of Surgeons of

* An "anti-vivisection prayer meeting," duly advertised at intervals during the past two years, has been one of the features of the anti-vivisection movement in Edinburgh.

London, one of the wonders of the scientific world, is his monument. *Si monumentum requiris, circumspice*, may truly be said by those who gaze at his work. I have no time to detail to you why Hunter has been termed the father of modern surgery, but you will find it was because he was a great physiologist. He did many experiments on living animals. The results of one of these led him to revolutionize the treatment of aneurism—that disease of arteries always so dangerous, and nearly always deadly, before he invented the operation which bears his name. The singular history of that operation has been well told by Professor Owen, formerly Curator of the Hunterian museum, and therefore one who is intimately acquainted with the history of Hunter's work.* Hunter was interested in the growth and shedding of the stag's antlers, and being curious to know what would happen to the growing antler if deprived of its supply of blood, he tied the external carotid artery on one side of the neck. On examining the antler a week later, he found, to his surprise, that its root was warm and pulsating, as it had been previous to the operation. His first impression was that he had not tied the artery properly. To satisfy himself on that point, he had the animal killed, the arteries of its head and neck injected, and then minutely dissected; and he found that the carotid had been duly tied, but that small branches springing from the cardiac side of the ligature had enlarged, and had thus carried by collateral channels blood to the antler. He had not anticipated this result. He now saw that small blood-vessels may become enlarged, to meet altered physiological circumstances. He quickly translated the thought to popliteal aneurism. He determined to tie the artery on the cardiac side of the throbbing tumor, and hoped that while the stagnant blood would coagulate within the aneurismal sac and terminate the agony of its throb, and the fatal danger of its bursting, still, haply, the limb beyond the seat of ligature might not die, but might be saved by the gradual establishment of a collateral circulation, as in the case of the antler. It was even so. The scientific instinct of Hunter guided him aright, and ever since his day the Hunterian operation for aneurism is that

* See *Brit. Med Jour.*, 1879, Vol. I, p. 284.

adopted; and it would be difficult to estimate the number of limbs and lives that have been saved owing to the thoughtful observation of the effect of tying an artery in the neck of a stag.

But how can I possibly recite in an hour all the discoveries regarding the circulation made by vivisection? Harvey and all before him thought that the heart is the great source of the heat of the blood. The great phenomenon of fever is an increased production of heat. How could we hope to gain a true theory of heat-production in fever if we are still under the delusion that the heart is the great source of heat? Experiments on animals alone showed that the heart is not a more important source of heat than any other muscle, and that the hottest blood of the body is not in the heart.

Our knowledge of the causes of the sounds of the heart we owe to experiments on animals, aided by the observation of diseased conditions. The late Dr. Hope, when a resident physician of the Royal Infirmary of Edinburgh, performed the celebrated experiment in which he hooked aside the sigmoid valves at the arterial openings of the heart of an animal, and found that the second cardiac sound disappeared. Also, by experiments on animals, it has been shown that the first sound of the heart depends on vibration of the auriculo-ventricular valves, and the contracting muscular fibers of the ventricles. The knowledge thus gained experimentally is daily of service to the physician. When he hears the second sound of the heart changed from a sharp click into a blowing murmur, loudest over the third right costal cartilage, he knows at once that the sigmoid valves of the aorta are no longer preventing the return of blood from the aorta into the heart, that the left side of the heart has its labor increased, and that the life of the individual is in great danger if ever he overtasks the heart by severe exertion. Many other facts of value in practical medicine attach themselves to a knowledge of the causes of the cardiac sounds.

Again, where shall we find in physiology and pathology a subject more important than the functions of the nerves of the heart and blood-vessels? How could we know that the heart has within itself the nervous apparatus essential for its movement, unless we excised the heart of an animal—a frog, for example—

and found that it still goes on beating, and that when cut into pieces, that portion containing the nerve-cells is the only part which continues to beat? How could we have known the great fact that there is a nerve which controls the cardiac movements, and can arrest them, and can in some occasion a fatal swoon, if it had not been discovered by Weber that when the pneumogastric nerve is divided and its cardiac end stimulated the heart's action is always retarded, and it may be for a time arrested? That experiment laid the foundation for our knowledge of inhibitory nervous action—a subject of far-reaching significance, and essential for a knowledge of the function of the nervous system. Again, how could we, but by experiment on animals, have made the important discovery that the nerves which inhibit the heart are affected by various drugs; some, like atropia, paralyzing them; others, like pilocarpine, increasing their sensitiveness? Again, all that we know definitely regarding nerves that accelerate the heart's action we owe to experiments on animals performed by Ludwig and others. The key to our knowledge of the great system of nerves that presides over the blood-vessels was discovered by experiment. Bernard divided the sympathetic nerve in the neck of a rabbit, and observed that the blood-vessels on the same side of the head became dilated. The cranial end of the divided nerve was afterward stimulated, and pallor of the previously congested part was the result. That was the discovery of vaso-motor nerves. All the arteries and veins in the body are governed by such nerves. Were we still ignorant of them, we could not understand the pathology of those forms of paralysis termed reflex, and, necessarily, we could not devise any rational method of treatment. And again, the nerves which cause dilatation of blood-vessels—our knowledge of such nerves we owe entirely to experiments on animals.

Time will not allow me to do more than merely say that to experiments on animals we owe much knowledge regarding the action of drugs on the heart; regarding the coagulation of the blood; regarding its respiratory changes and the manner in which its composition is affected by the inhalation of various gases; indeed, to show fully all that we have learned concerning the circulation from experiments on animals would require at least ten

lectures instead of one. Other departments of physiology also teem with facts arrived at by vivisection. Were all these facts eliminated from physiology and from medicine, the remnant would indeed be a sorry figure, and in this age of brilliant scientific advancement, those who profess medicine would be treated with contempt, because of their almost complete ignorance of the bodily mechanism. I am convinced that if unbiased minds would only consider what has actually been achieved for medical science by experiments on living animals, they would not fail to see the necessity for allowing without hindrance all duly qualified medical men, willing to undertake the labor, to carry on in the future that kind of research which has yielded so much fruit in the past. And although the great majority of even the educated public can not, from want of a medical education, fully understand our methods of research and the objects we have in view, yet they ought to credit us with sincerity, and with a desire to pursue in a humane manner the search for that knowledge by which the whole civilized world profits daily.—*London Lancet.*

RESOLUTIONS ADOPTED BY THE INTERNATIONAL MEDICAL CONGRESS, LONDON, 1881, AS TO "TESTS OF SIGHT SUITABLE TO BE ENFORCED IN THE CASE OF SIGNALLERS AND LOOK-OUT MEN, AND OTHER PERSONS BY LAND OR SEA, WITH SUGGESTIONS AS TO IETERNATIONAL ARRANGEMENTS FOR A UNIFORM SYSTEM OF MARITIME, COAST, AND HARBOR SIGNALLING, WITH A VIEW TO THE SAFETY OF LIFE AND PROPERTY, Followed by Explanatory Remarks under the several Articles.

A.—WITH RESPECT TO LAND.

(1) That the recommendations of the last International Medical Congress, held at Amsterdam in 1879, are accepted by the present Congress as forming the most suitable basis upon which every government may frame its own regulations as to its railway service. They are contained chiefly in Article XII of the "*Projet d'un règlement pour l'examen des facultés visuelles du personnel des chemins de fer,*" laid before and accepted by the

Ophthalmological Section of the Amsterdam Congress, which is nearly as follows:

"For admission as *driver* or *stoker*, is required a healthy condition as regards habitual congestion or irritation of the eyes and eyelids; *for each eye*, complete field of vision; normal acuity and refraction; color sense at least four-fifths of the normal; total absence of commencing cataract, or any other progressive disease.

"For admission to other *railway service*, is required a healthy condition as regards habitual congestion, or irritation of the eyes and eyelids; *for each eye*, complete field of vision, total absence of cataract, or any other progressive disease; *for one of the eyes*, normal acuity and refraction, color sense at least three-fifths of the normal; *for the other eye*, sight of at least half the normal, as regards both acuity and color sense."

B.—WITH RESPECT TO SEA.

(2) That in *ocean-going ships* and in *all steamers*, especially those carrying passengers, there should always be in actual control of the helm a person possessing *with the two eyes together, without glasses*, normal sight, both as to acuity and colors; and that, *in addition*, in such ships, *at least one* of the persons actually on the look-out should be similarly qualified.

(3) That, in vessels engaged in the coasting trade, every person liable to take charge of the helm should possess *with the two eyes together, without glasses*, sight equal to at least two-thirds of the normal, both as to acuity and colors.

(4) That all persons engaged in marine signalling, ashore or afloat, and all pilots, should have normal sight, both as to acuity and colors, as defined in Article 2.

(5) That hypermetropic persons, although satisfying the requirements of Articles 2, 3, and 4, should, nevertheless, not be admitted, if before the age of eighteen they have a manifest hypermetropia of one dioptre.

(6) That re-examinations should be made at the age of forty-five.

(7) That the examinations should be conducted by persons of recognized competency, under the direction of a central medical authority in each country.

(8) That an international commission should be constituted, to fix upon such further measures as to signals as may be necessary for safe navigation, and, specially, upon the standard colors, and the sizes of the signals employed.

EXPLANATORY REMARKS.

[THE NUMBERS REFER TO THE RESOLUTIONS.]

A.—AS TO LAND.

(1) The signal services on land, though quite as important, are not so purely an international matter as those having reference to the sea. Many countries have already established legislation in this respect, and others are introducing it by degrees. It is believed that the standards now recommended may be of general utility, especially in the case of conterminous countries. The mode of examination, for colors especially, is here, as at sea, of the highest possible importance.

B.—AS TO SEA.

It is obvious that regulations having an international character become every year more urgently required, from the increasing number, size, and speed of vessels.

In view of the practical difficulties with which all compulsory examinations are attended, it has been sought,—

(*a*) To limit the examination in each case to what is strictly necessary.

(*b*) To require them only when absolutely indispensable, and of the smallest possible number of persons.

(*c*) To simplify the methods as much as possible.

On large ships many sailors, not required for the helm, or to be responsible for the look-out, may be admitted without certificate of examination; but as it will be in the interest of all to be possessed of such a certificate, which would represent a higher competency, it may be expected that many would themselves seek for it, from whom it would not necessarily be demanded; and facilities for obtainining it should at all times be at hand in maritime ports.

(2) Good sight *without the aid of* glasses is required, because

glasses fail to help just where clear sight is most needed, *e.g.*, in storm, rain, or fog.

Acuity of Sight.—Complete acuity is not more than sufficient, and even scarcely sufficient, having regard to the increasing number, size, and speed of steamers. But it will be practically enough if at sea this complete acuity is attained by the use of *both eyes combined.* The number of persons excluded under this rule will be much less than if complete acuity for *each eye separately* is exacted.

The acuity is supposed to be determined by viewing letters or signs at a certain distance, under a certain angle, on the principle of the test-types of Snellen.

Color Sense is supposed to be tested by pseudo-iso-chromatic tables, on the principle of those of Stilling, subject to control by the use of light transmitted through colored glass, in imitation of signal lights. This control will also aid in detecting central scotoma for colors, in the very rare cases where it might co-exist with the required acuity.

Holmgren's excellent tests have been already extensively adopted. But their use demands more skill in the examiner. Tests well selected on the principle of Stilling might be very well adopted as standards for ascertaining normal color sense, as well as definite degrees of color sense below the normal. The principle of Stilling has been recommended as affording a quantitative as well as a rapid qualitative test.

(3) A lower standard is fixed in the coasting trade (excluding steamers), because the vessels are smaller and the speed less. Moreover, a demand for full acuity would render it difficult to procure a sufficient number of sailors; as each hand must be liable in small vessels to serve at the helm.

(4) It is obvious that the persons here named must have full acuity and color sense.

(5) Persons having a manifest hypermetropia above that here indicated would not possess, at the age of thirty-five or forty, without glasses, the needful degree of acuity; it is better, then, both for themselves and the service, that they should not be admitted at all.

(6) The attendant practical difficulties have caused one re-examination only to be advised, at the age of forty-five. It has been found that the very great majority of persons, once admitted as having good sight, have retained it up to that age. A great number, no doubt, have been admitted hitherto without sufficient examination. Still, it would not be practicable to institute a general examination of those already in the service. Nevertheless, it would be desirable to examine anew, in the case of passenger steamers, all those responsible as helmsmen and look-out men.

The Congress recommends that surgeons of ships should be qualified to exercise special surveillance as to the sight of those employed in these capacities on board.

(7) A central medical authority is requisite to insure the perfection of the system and its uniformity. He should propose the examiners, and be responsible for their fitness. They should be men of ascertained competency, and as far as practicable, qualified as medical specialists.

(8) The measures recommended in Articles 2 to 7 should be brought into operation without delay. But an international commission would still have to determine the precise color of the glass, securing uniformity in that as well as in the size and disposition of the signal lights.

The Congress lay the greatest stress upon the appointment of this commission in respect of marine signalling, as quite indispensable for the attainment of the object in view. The commission would have to inquire into, and decide upon, many matters on which information is at present incomplete, and regarding which only a few points have been touched upon in Article 8.

Every government, especially the maritime governments, should be requested to place one or more members on the commission, and chiefly experienced naval officers and medical specialists.

It is understood that this question of an international commission is about to be submitted to the legislature of the United States of America, supported by a petition largely signed by scientific men of that country.

The resolutions emanated from the Ophthalmological Section of the Congress, and were drawn up, in the first place, by a committee representing twelve different countries.

FORTY-SEVENTH CONGRESS, FIRST SESSION. HOUSE OF REPRESENTATIVES. REPORT No. 445.

The Commitee on Naval Affairs, to whom was referred joint resolution No. 24, *relating to color-blindness and visual acuteness in persons employed in the Navy and merchant marine, have considered the subject, and submit the following report:—*

At the last session of Congress this subject was brought to the attention of the House by petitions signed by numerous highly distinguished scientific men of the country. The Committee on Naval Affairs of that House gave the subject careful attention, and made a report, which we quote as the best presentment of our views which we are able to make. That report is No. 1569, Forty-sixth Congress, second session.

Dr. B. Joy Jeffries, of Boston, who has devoted much time to the study of this very important subject, and who has voluntarily, and at his own expense, done much to awaken interest in it in several of the States, and who by his disinterested efforts has induced many of the great railroad companies to adopt his system of examination and test for their employés, was invited to come before the committee and give his views upon the subject. He accepted the invitation, and on the twenty-third day of January last he appeared before the committee and illustrated the various methods which have been adopted in this country and in Europe for the detection of color-blindness, and the tests made use of to determine visual power and acuteness, and explained the importance of establishing by an international congress a universal system of examination and tests for these visual defects, and a standard of colors for signals at sea, to be used by maritime nations. An abstract of the remarks of Dr. Jeffries is hereto annexed as an appendix to this report.

The committee think the subject is of so great importance as to demand the attention of all maritime countries, and they believe that the action recommended by this committee will, if adopted by Congress, meet with ready response from the other nations,

and that a system may result from it which will prove of vast benefit to the human race.

They recommend the adoption of the accompanying joint resolution as a substitute for that referred to the committee:

FORTY-SEVENTH CONGRESS, FIRST SESSION. HOUSE RESOLUTION 135.

Joint resolution relating to color-blindness and visual acuteness in persons employed in the Navy and merchant marine.

WHEREAS, it is important that definite and uniform standards of examination for color-blindness and tests for visual acuteness in persons employed in the Navy and merchant marine should be established, which shall be in harmony with such standards and tests as are or may be established by other nations. Therefore,

Resolved by the Senate and House of Representatives of the United States of America, in Congress assembled, That the President is hereby authorized and directed to appoint, by and with the advice and consent of the Senate, some suitable person qualified for such service, who, with one line officer of the Navy and one medical officer of the Navy, to be detailed or designated by the Secretary of the Navy, shall attend and represent the United States in any international congress or convention held by authority of law in any European nation to consider and act on said subject; and the sum of ten thousand dollars is hereby appropriated, out of any money in the Treasury not otherwise appropriated, to be used and expended, or so much thereof as may be needed, under the direction of the President, to compensate the person so appointed, and defray the necessary expenses of the person so appointed and of the officers of the Navy so detailed or designated. And the person so appointed and the officers of the Navy so detailed or designated under the provisions of this act, shall join in a report of the proceedings of such congress or convention, and the conclusion reached thereby, if any, to the President, to be by him laid before Congress, to the end that an international system of examinations for color-blindness and tests for visual acuteness, and standards for colors for signals used at sea, may be established by law.

IN WHAT CASES SHALL THE MEDICAL EXAMINER DECLINE TO VIEW A DEAD BODY? By Medical Examiner ALFRED HOSMER, M.D., of Watertown.*

To the rule laid down I have in practice made an exception when a notice has been sent by a magistrate or municipal officer of high grade. I have then entered upon a medical examination without preliminary questions, and it is a curious fact that in all such instances I have found myself dealing with a kind of inverted cone, so that the further down the investigation proceeded the nearer it has come to nothing.

"Upon the view of the dead bodies of such persons only as are supposed" etc. The word "only" is here used in a strong restrictive sense, and contains the prohibition which limits the official competence and jurisdiction of the medical examiner. Unless there be a supposition of violence his commission confers upon him no authority and he is powerless.

In deciding what is the significance of the word "persons," I shall take the liberty of referring you to an instructive paper,* written in answer to the question "What constitutes the dead body of a person?" and presented to this Society at the February meeting. The conclusions to which the writer came, after careful study and consultation, interests us now only so far as they relate to what of humanity is not included in the definition of "persons," as that term is understood and accepted by those who interpret law, and explain the intent of its equivocal portions. According to the indisputable authorities whom he quotes, judicial voices all agree in the declaration that a child is not born until it is entirely extruded from the maternal body, and that, although it may have breathed at some point in the partuient passage, if it be still at the instant of complete expulsion it has never become a person; and, therefore, cannot have been the subject of such violence as the medical examiner is qualified to recognize and certify to. No child known to be dead-born can be inspected in the sense of viewing the dead body of a person. But the question at once arises as to what course the medical

* Boston Medical and Surgical Journal, vol. cili., p. 200.

examiner shall pursue in the event of the discovery, through the improper disposition of the body of a child born prematurely or at term, respecting which no information can be obtained. For a portion of them, Medical Examiner Holt lays down the following rule: "It would, perhaps, only be safe to conclude that all fœtuses born in the first half of pregnancy cannot live for any period, and the body of such an one cannot be considered the dead body of a person within the meaning of the law."

According to Caspar the maximum length of a fœtus at the end of the twentieth week of utero-gestation is twenty-eight centimeters. The application of a metric measure will determine with sufficient accuracy whether in a particular instance the medical examiner is dealing with a person or a thing. In other words he must decline to view a fœtal body unless it be more than twenty-eight centimeters long.

It appears from the Executive Board for 1879 * that in thirty-eight per cent. of all the views held the cause of death was found to be a natural one. Where three succumbed to violence, two yielded to nature. Can it be that in so large a proportion of the cases there was so much obscurity and mystery as to justly excite a suspicion of unlawful agency? Is it not possible that the office of medical examiner, like the drug last added to the materia medica, has been perverted through its application to conditions for which it was never intended? If this mistake has been committed, there was during the first few months that followed his institution an apology for it in the deficient condition of our statutes. An act † of the legislature of 1878 is the first that has

* Boston Medical and Surgical Journal, vol. cili., p. 265.

† ACTS OF 1878, CHAPTER 174. SECT. 1. No human body shall be buried, or removed from any city or town, unless a proper certificate has been given by the clerk or local registrar of statistics to the undertaker or sexton, or person performing the burial, or removing the body. This certificate shall state that the facts required by chapter twenty-one of the General Statutes have been returned and recorded; and no clerk or local registrar shall give such certificate or burial permit until the certificate of the cause of death has been obtained from the physician, if any, in attendance at the last sickness of the deceased, and placed in the hands of said clerk or local registrar; *provided*, that in those cities and towns where local boards of health have been established, the certificate of the cause of death shall be approved by such board before a permit to bury is given by the registrar or clerk. Upon application, the chairman of the local board of health or any physician employed by any city or town for such purpose, shall sign the certificate of the cause of death to the best of his knowledge and belief, if there has been no physician in attendance. He shall also sign such certificate, upon application, in case of death by dangerous contagious disease, or in any other event when the certificate of the attending physician cannot for good and sufficient reasons be easily enough obtained. In case of death by violence, the medical examiner attending shall furnish the requisite medical certificate. Any person violating the provisions of this section shall be punished by a fine not exceeding twenty-five dollars.

ever authorized any one to certify to the cause of death whenever there has been no medical attendant during the last illness. Having made a general provision, it excepts cases of violence, and refers them to the medical examiner for certification. It thereby intimates that the simple fact that a man has died without medical supervision is not a sufficient reason for demanding a view; that it does not require or even permit the medical examiner to hold one.

"But nothing herein shall prevent any medical examiner from acting as such in any part of his county." This provision forms the concluding portion of the sixth section of the law to which we owe our official being. It is simply a negation, and conveys the idea that the medical examiner has full legal liberty to exercise his office throughout his county irrespective of the district lines originally established by commissioners. Without violating any statute a physician may render professional service to every patient who seeks it, yet there is a rule of etiquette, dictated by the sentiments of honor, justice and propriety, not to speak of the less worthy consideration of self-protection, which restrains the average medical man, and admonishes him not to interfere in work already assigned to another. This principle should guide the medical examiner in his conduct towards official neighbors. Human nature is tenacious of its lawful possessions, it is jealous and intolerant of seeming intrusion. Provoke collision and coöperation is at an end. The success of this new system will not attain the highest possible degree unless its essential instruments act in cordial harmony. We can give no better proof of our devotion to the cause which we have espoused, and to which the acceptance of our commissions has committed us, than by cultivating and maintaining among ourselves relations, not simply of mutual good-will and confidence, but of active friendship. We should adopt a policy which is rendered safe and simple by the exclusion of all doubts and questions as to propriety. Therefore I hold the opinion that a medical examiner should decline to hold a view outside of the district for which he has been appointed unless the medical examiner whose district he enters either requests to be relieved from duty in a particular instance, or is so situated that his services cannot be obtained within a period of

time which is reasonable when considered with reference to the necessities of a given case.

Practice is the acknowledged route to perfection, and the novitiate is terminated only by the exercise and action which constitute experience, and confer new ability. For his training and instruction, for the gratification of that sense which appreciates and enjoys the curious and the interesting, the medical examiner needs all the opportunity and all the material which his district can possibly furnish. He is defrauded and retarded in his official growth whenever that to which he alone has a claim is converted to the use and advantage of another.

The medical examiner required to be "learned in the science of medicine," must by a physician, and is under a double obligation to be of good repute. Even if his ideas of duty are less severe than those which have found expression here, his conduct should be regulated by those principles, a strict adherence to which has made the name of medicine so suggestive of intelligence, moral worth and public spirit.

Too Many Doctors. Efforts to Elevate the Standard of Medical Education.

A physician of Brooklyn was arrested recently for picking a lady's pocket in a street-car. He was found to be one of the numerous poor devils with M.D. attached to their names, who, to save their lives, cannot drum up a practice. Dr. Lamson, the English-American murderer, was driven to crime by his necessities. He could not earn his salt in the practice of medicine. There are hundreds of M.D's. in New York and Brooklyn who are almost starving to death. Many of them do not deserve to succeed. Many of the charlatans, quacks and incompetents fare badly, while others flourish finely right alongside well equipped and worthy professionals who can hardly keep soul and body together. Two facts have for years been painfully apparent to the profession in New York. The ranks are fearfully overcrowded, and the standard of competency is altogether too low.

The profession is now trying to remedy the latter evil, expecting that if the standard of medical education be elevated the evil of excessive numbers will be abated. Bills now before the New York legislature provide that the future graduates of all medical colleges, although holders of their several diplomas, shall be required to stand an approved examination subsequently, before one of several boards of examiners to be appointed by the regents of the University of New York. They prohibit persons from practicing medicine unless their diplomas issued by their medical colleges are reinforced by such a second diploma. They include other measures for elevating the standard of medical proficiency.

On Thirteenth street, between Second and Third avenues, just one block, I recently counted the signs of fifteen physicians. There is no trade or profession in New York that is more overcrowded than the ranks of the medical men. The doctors and surgeons who are making fortunes may be counted on one's fingers. Perhaps one in ten of the profession are earning first-rate livings. The great majority find their professional returns meager enough. Many of them could not live on the scanty doctor's fees they receive. They combine some other business with doctoring, or engage in some branch of the medical art outside the limits of legitimate practice. Not a few doctors' wives support the family by keeping boarders. I could mention the names of two or three men of fair medical attainments, who have so utterly failed to build up a desirable practice that they have moved into the neighborhood of cheap bawdy-houses for the purpose of securing the lowest sort of practice. There are a good many men, not recognized by the regular profession, who were originally ambitious to build up a legitimate practice, but whose adversities have so crushed and debased them that they have become charlatans, quacks and abortionists, not so much by choice as from a grinding necessity to win bread by foul, if they cannot by fair means. Then in the ranks there are hundreds whose general attainments are meager, and whose special medical training is no better. They are humbugs by nature and practice, and able to impose only on the weakest and most illiterate of the people.

It is true that "there is room enough higher up," but this is

very poor encouragement for ninety-nine in a hundred medical students, for do what they will, in New York city at least, they never can get "up higher." The men who achieve great success there in medicine are men of marked individuality, who have qualities of mind and manner which raise them inevitably above the mass. They would have succeeded just as well in whatever other pursuit they had chosen to enlist their energies. Many of them had a terribly bitter struggle at first. One physician whose income is $60,000 per annum earned an average of less than $700 a year for the first three years of his practice. I think that his great success is due more to his knowledge of human nature and his splendid business ability than to his proficiency in medicine. But the majority of young medical graduates who go there full of hope and enthusiasm, totally ignorant of the fact that medicine is already overcrowded, confidently expecting a brilliant career, find the bitterest difficulties in the way of their progress. There are a good many of them who, after a few years' conflict with inexorably adverse circumstances, abandon the fight defeated, and return to industries which will at least put bread into their mouths.

The prominent physicians think that the establishment of examining boards, having a tendency to lift the standard of medical culture, will prevent many of these sad life histories, by increasing the difficulty of getting into the profession, and thus removing one of the temptations to the study of medicine by young men without preparatory training.

PROGRESS OF MEDICINE.

Variola.—Dr. J. T. Marcley, of Buffalo, wrote notes of twenty-one cases of small-pox, and thus summarizes some of their interesting and instructive features:

First, in regard to the occurrence of the different symptoms.

Chills were present in all cases, in some quite severe.

Headache of a more or less violent character was present in all.

Backache occurred in ten, but was violent in only one (hæmorrhagic).

Nausea was present in all; vomiting, in eleven; violent and long-continued in only one case.

The tongue was much coated in all cases, but was not the seat of much eruption, only in two.

Sore throat was complained of in eight, severe in only two.

Delirium was present in four, very violent only in the hæmorrhagic case.

Abdominal pain in one case.

Constipation was marked in all cases; convulsions occurred in only one case.

Itching was distressing in two or three only.

Conjunctivitis was present in four cases, severe in only one.

Pain in hands and feet was complained of in six cases, severe only in the hæmorrhagic.

Œdema of lower extremities was marked in only one case.

Loss of hair occurred only in one, to any extent.

Pulse, owing to the difficulty in getting at this symptom, on account of swelling, it was neglected.

In regard to the period at which the eruption appeared in those cases that I could follow closely, it varied from two to five days from the beginning of the initial fever.

The period of incubation was twelve days in seven cases, and in three, fourteen days.

In regard to vaccination, thirteen had been vaccinated, none, however, within a number of years. Eight had never been vaccinated. Of those vaccinated, the disease assumed the form of varioloid in five cases. Distinct in one, coherent in four, confluent in two, and hæmorrhagic in one case. Of those not vaccinated, distinct in one, confluent in six. One died before the eruption appeared. In only one case was there any history of a successful (or non-successful) re-vaccination. This one had the disease the lightest of any, only a dozen spots appearing.

Although these cases are few in number, they speak very strongly in favor of vaccination, and especially re-vaccination.

The treatment of these patients was very simple. Anodynes and cathartics, or rather, laxatives and stimulants, as required. Potass. chlorat. was found very good in the sore throat of this disease. Locally, I found nothing so agreeable to the patient as olive oil, and as far as preventing the pitting goes, I do not see but it proves as satisfactory as anything else.

The method followed in disinfection, was the burning of sulphur in tightly closed rooms, leaving them so for several hours, then thoroughly airing them; washing the floors, walls, ceilings, wood-work, and all wooden articles of furniture with a strong solution of carbolic acid, and by burning all cloth goods (bedding, curtains, carpets, etc.) that were in the least infected.—*Buffalo Medical and Surgical Journal.*

PRELIMINARY NOTICE OF THE COLLEGE FOR MEDICAL PRACTITIONERS, ST. LOUIS. Inaugurated, 1882.

Object: To teach Medical Practitioners, by practical instruction, the special branches of medicine and surgery.

There will be twelve departments, so arranged that special courses may be taken with as little loss of time as possible.

Full particulars with regard to the time that special courses may be taken, the kind of clinics, the terms etc., will soon be ready.

The following gentlemen have been elected to fill a part of the departments:

Thos. F. Rumbold, M. D.; Ewd. F. Borck, M. D.; W. Hutson Ford, M. D.; Wm. Dickinson, M. D.; W. B. Outten, M. D.; Col. Fred. T. Ledergerber, Att'y. at Law; C. H. Hughes, M. D.;

Others who have had especial advantages in their departments will be added:

For particulars, enquire of the Dean, Dr. Thos. F. Rumbold, 1225 Washington Ave.; or the Secretary, Dr. Edw. Borck. N. E. Cor. of Fourth and Market Sts. St. Louis, Mo.
March 21, 1882.

Items.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE UNITED STATES MARINE HOSPITAL SERVICE, January 1, 1881, to March 31, 1882.

Bailhache, P. H., Surgeon. To proceed to Richmond, Va., as inspector, January 31, 1882.

Vansant, John, Surgeon. Detailed as President Board of Survey, physical examination of officers of the Revenue Marine Service; March 18, 1882.

Wyman, Walter, Surgeon. When relieved by Surgeon Austin to proceed to Baltimore, Md., and assume charge of the service at that port; March 4, 1882.

Fessenden, C. S. D., Surgeon. To proceed to Greenport, Sag Harbor, New York, as inspector, January 26, 1882. Detailed as President Board of Survey for the physical examination of pilot, to meet at Boston, Mass., February 16, 1882; February 7, 1882.

Purviance, George, Surgeon. To proceed to Gloucester, Mass., to extend relief to shipwrecked seamen; January 12, 1882. Detailed as Recorder Board of Survey for the physical examination of pilot, to meet at Boston, Mass., February 16, 1882; February 7, 1882.

Austin, H. W., Surgeon. To proceed to Cincinnati, Ohio, and assume charge of the service at that port, relieving Surgeon Wyman; March 4, 1882.

Godfrey, John, Passed Assistant Surgeon. When relieved by Passed Assistant Surgeon Goldsborough, to proceed to New Orleans, La., and assume charge of the service of that port; March 4, 1882. Granted leave of absence for eight days; March 24, 1882

Irwin, Fairfax, Assistant Surgeon. Granted leave of absence for seven days; January 18, 1882.

O'Connor, F. J., Assistant Surgeon. To report to General Superintendent, L. S. S., for duty as member of board to examine keepers and crews of the Life Saving Service; January 4, 1882. Relieved on account of sickness, and directed to report to Surgeon in-charge, New York, N. Y., for temporary duty; January 18, 1882. To proceed to Detroit, Mich., and report for duty to the Surgeon-in-charge; February 9, 1882.

Banks, C. E., Assistant Surgeon. To proceed to Portland, Oregon, and assume charge of the service at that port; March 1, 1882.

Devan, S. C., Assistant Surgeon. Detailed as Recorder Board of Survey, physical examination of officer of the Revenue Marine Service; March 18, 1882.

Urquhart, F. M., Assistant Surgeon. To report to General Superintendent, L. S. S., for duty as member of board to examine keepers and crews of the Life Saving Service; January 18, 1882.

Kalloch, P. C., Assistant Surgeon. To proceed to New York, N. Y., for temporary duty; January 23, 1882.

RESIGNATION.

Hebersmith, Ernest. Resignation as Surgeon accepted, to take effect November 26, 1881; January 17, 1882.

PROMOTION.

Smith, Henry, Surgeon. Promoted and appointed Surgeon from January 20, 1882; January 20. 1882.

APPOINTMENT.

Kalloch, Parker C., M. D., of Pennsylvania, having passed successfully the examination required by the Regulations, was appointed an Assistant Surgeon by the Secretary of the Treasury, January 23, 1882.

PROF. JOHN E. OWENS has resigned the chair of Orthopedic Surgery in Rush Medical College to accept the chair of Surgical Anatomy and Operative Surgery in Chicago Medical College.

THE RADICAL CURE OF CANCER. Announcement Concerning Essays upon this subject offered in competition for prizes.

The undersigned, who in October last, was delegated to receive competing essays on the subject of the radical cure of malignant disease, announces that three essays were presented. In the consideration of their merits the assistance of Dr. George B. Shattuck, Editor of the *Boston Medical and Surgical Journal* was invoked; and it has been decided that no essay is worthy of a prize.

The same subject namely *The Probability of the Discovery of a Cure of Malignant Disease, and the Line of Study or Experimentation likely to bring such a Cure to light*, is proposed for essays to be presented in competition not later than the first day of December, eighteen hundred and eighty-three (1883), to the undersigned, who, with such assistance as he may select, will be the judge of their merits.

For the best essay on the above subject a prize of ONE THOUSAND DOLLARS will be given, the right being reserved to withhold the prize in case no essay of sufficient merit be presented.

The sum above mentioned has already been deposited in the New England Trust Company, of Boston, subject to the call of the judges.

The essays must be legibly written in English, and neatly bound. Each one must bear a motto, and be accompanied by a sealed envleope bearing the same motto, and inclosing the name and address of the writer. They will all remain in the possession of the donor of the prize for convenience of reference, and the privilege is claimed to publish the successful one, with the name of the writer. No writer however, surrenders the privilege of retaining a copy of his essay, and publishing it.

The decision concernig the merits of the essays will be made chifley from a practical stand-point, it being the object of the donor of the prize to obtain suggestions by which a search for a cure for cancer may be instituted.

For the donor,

J. COLLINS WARREN, M.D.,

58 *Beacon Street, Boston, Mass., U.S.A.*

March, 1882.

PROF. D. W. GRAHAM has been elected Secretary of the Woman's Medical College. Prof. W. J. Maynard has resigned the chair of Therapeutics and accepted that of Dermatology and Venereal Diseases. Prof. Marie J. Mergler has been made Professor of Therapeutics, in addition to the chair of Materia Medica occupied by her.

PROF. F. L. WADSWORTH has resigned the Lectureship of Physiology in the spring course of Rush Medical College.

PROF. I. N. DANFORTH has resigned the Professorship of Pathology in Rush Medical College, and accepted a chair of Clinical Medicine in the Chicago Medical College.

DR. E. C. DUDLEY has accepted the chair of Medical and Surgical Diseases of Women and of Clinical Gynæcology in Chicago Medical College.

DR. WALTER HAY has accepted the chair of Materia Medica in Chicago Medical College.

DR. OSCAR C. DEWOLF has received the chair of State Medicine and Hygiene in Chicago Medical College.

DR. CHRISTIAN FENGER has accepted the chair of Pathology and Surgical Diseases of the Genito-Urinary Organs in Chicago Medical College.

DR. F. C. SCHAEFFER has been appointed Professor of Anatomy in Chicago Medical College.

DR. ROSWELL PARK has received the appointment to the Lectureship of Surgery in Rush Medical College.

DR. FRANK BILLINGS has been appointed Demonstrator of Anatomy in Chicago Medical College.

Dr. M. C. GREEN, of Chicago Medical College, has been made assistant to Department of Nervous Diseases in St. Joseph's Hospital, Chicago.

CLINICS.

MONDAY.

Eye and Ear Infirmary—1.15 p. m., Otological, by Prof. Jones; 2.15 p. m., Ophthalmological, by Prof. Hotz.
Mercy Hospital—2 p. m., Medical, Profs. Hollister and Quine.
Rush Medical College—3 p. m., Dermatological and Venereal, by Prof. Hyde.
Woman's Medical College—2 p. m., Dermatological and Venereal, by Prof. Maynard.

TUESDAY.

Cook Co. Hospital—2 to 4 p. m., Medical and Surgical Clinics.
Mercy Hospital—2 p. m., Surgical Clinic, by Prof. Andrews.
Woman's Medical College—10 a. m., Prof. Ingals.

WEDNESDAY.

Chicago Medical College—2 p. m., Eye and Ear, by Prof. Jones.
Rush Medical College—2 p. m., Medical, by Dr. Bridge; 3 p. m., Ophthalmological and Otological, by Prof. Holmes; 3:30 to 4:30 p. m., Diseases of the Chest, by Dr. E. Fletcher Ingals.
Woman's Medical College—2 p. m., Eye and Ear, by Dr. W. T. Montgomery.
Eye and Ear Infirmary—2.30 p. m., Dr. E. J. Gardiner.

THURSDAY.

Chicago Medical College—2 p.m., Gynæcological, Prof. Dudley.
Rush Medical College—2 p. m., Diseases of Children, by Dr. Knox; 3 p. m., Diseases of the Nervous System, by Prof. Lyman.
Eye and Ear Infirmary—2 p. m., Ophthalmological, by Dr. Hotz.
Woman's Medical College—3 p. m., Surgical, by Prof. Owens.

FRIDAY.

Cook County Hospital—2 to 4 p. m., Medical and Surgical Clinics, by Profs. J. H. Hollister and R. N. Isham.
Mercy Hospital—2 p. m., Medical, by Prof. Davis.

SATURDAY.

Rush Medical College—2 p. m., Surgical, by Prof. Gunn.
Mercy Hospital—2 p. m., Surgical Clinic, by Prof. Andrews.
Chicago Medical College—3 p. m., Neurological, Prof. Jewell.
Woman's Medical College—2 p. m., Gynæcological, by Prof. Stevenson.

Daily Clinics, from 2 to 4 p. m., at the Central Free Dispensary, and at the South Side Dispensary.